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ABSTRACT

Nursing personnel demands and resources in North Dakota were assessed as part of a statewide nursing study. The objective was to determine the number and types of nurses needed in 1984 and 1986, and to compare anticipated nursing personnel supply and demand. The projections for the state as a whole and for regions within the state were designed to promote statewide nursing resource planning. An Organizational Development Model focused on nursing needs from three sources: nurse employers, nurse educators, and subgroups of nurses. Attention was directed to selected nursing education levels, nursing roles, and practice settings. The education levels included licensed practical nurse and diploma nurse, and the following college degree levels: associate's, bachelor's, master's, and doctoral. The roles were: general staff, clinical specialist, instructor, consultant, anesthetist, supervisor, administrator, nurse practitioner, and research consultant. Practice settings included hospitals (three sizes), nursing homes (two sizes), community health agencies, home health care agencies, educational programs, and location by county. In 1983, the Nursing Manpower Survey, which is appended, was sent to 210 nursing supervisors/managers, 76 percent of whom returned the completed survey. (SW)

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NORTH DAKOTA

STATEWIDE NURSING STUDY

MANPOWER DEMANDS AND RESOURCES

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PHASE I

NORTH DAKOTA STATEWIDE NURSING STUDY

PHASE I

****
MANPOWER DEMANDS AND RESOURCES
****

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Data Base Obtained: October, 1983
Report Submitted: March 21, 1984

Foreword

This report of the nursing manpower demands and resources in North Dakota represents one segment of a research project to develop a coordinated statewide nursing resource planning system. This research project has been administered under the guidance and funding of the North Dakota Board of Nursing.

Acknowledgement and appreciation are extended to the numerous individuals and organizations whose support and active involvement in the research project have made this study possible. Sharon Walker did all of the computer work under the direction and supervision of Dr. Smith. Appreciation is extended to each of the 159 survey respondents and specifically to:

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INTRODUCTION

The purpose of the Statewide Nursing Study is to provide information to the North Dakota Board of Nursing for decision-making and planning directed towards meeting the nursing needs of the citizens of North Dakota. The Board of Nursing has had numerous concerns during the past four years regarding nursing and its implications within the State of North Dakota. The Board's concerns include: 1) making decisions regarding the numbers and types of educational programs to prepare nurses 2) determining the scope of nursing practice in view of rapidly changing medical technology and 3) the basic question of preparation needed for practice. In order to address these concerns the Board determined that a systematic, state-wide, comprehensive study of nursing was needed.

The proliferation of nursing programs has been the greatest concern to the Board, particularily in light of the current controversy over the nursing shortage. Since the last study (Up-Date of the Need to Know-1976) four LPN programs have been initiated with one subsequently closing. Two additional LPN extension programs have been approved. The number of RN programs has remained the same, but one program has been granted an extension program. One RN program is also undergoing extensive study to determine the feasibility of becoming a baccalaureate program. A Master's program in Nursing has begun. A second college is conducting a feasibility study with a target date of 1984 for beginning the Master's program. There have been other requests from four different institutions for information regarding initiating nursing programs in those agencies.

The Board's initial objective is to provide safe practitioners for the public and as such, needs information to make decisions regarding: 1) determination of current practice 2) determination of continuing competency for relicensure and 3) career mobility. The Board has received numerous requests from various agencies asking if nurses are permitted under law to do such things as insert intrathecal catheters, administer continuous intravenous narcotics, serve as "first scrub", or prescribe "over the counter" medications. What might be safe in a large hospital with a variety of personnel involved in decision-making, might simply not be feasible in a smaller institution. However, if the Board gives an opinion it cannot be geographical in nature. In conducting a comprehensive study, sufficient data should be generated to at least establish a baseline of practice.

The Board of Nursing committed financial resources in July, 1983 to complete the Statewide Nursing Study. Neil Clark, Ed.D. was hired by the Board to design and implement the study. David Smith, Ph.D. was hired by the Board to provide data analysis and interpretation. The study was designed to be completed in three phases. Phase I was designed to investigate nursing manpower demands and resources. Phase II was designed to investigate the current scope of nursing practice. Phase III will provide the final report and recommendations for future planning.

PART A

NURSING MANPOWER DEMANDS

The phase I objectives of the North Dakota Statewide Nursing Study are:

1) To determine the number and types of nurses needed in 1984 and 1986.

2) To compare the anticipated nursing manpower supply with anticipated nursing manpower demands in 1984 and 1986.

3) To facilitate statewide nursing resource planning through continuous organizational development.

The objectives have been approached in the context of observed utilization of nurses and the probable future willingness and ability of selected health care organizations in North Dakota to employ nursing personnel with various educational backgrounds. The rationale of this research approach assumes that it would be wasteful for states and individuals to encourage the educational system to produce more graduates than would likely be employed. This report provides estimates that have been made by nursing directors or supervisors as to what the demand will be in 1984 and 1986 to meet the staffing needs they see as necessary to provide nursing services in different settings of care. The report also provides information about trends in various practice settings.

During the past three decades the availability and quality of health care services were expanded by: 1) an expanded number of health care facilities (especially hospitals) 2) increased third party reimbursement availability 3) increased complexity of health care delivery and 4) cost-effectiveness procedures for shortened hospital stays. Each of these factors caused an expansion in the demand for nurses. Despite increasing supplies of nurses shortages seem to persist. The problems of shortages and nursing education are related to each other in complex ways (Riley, 1981).

In the popular view, nurse shortages are extensive and stem from low salaries and stressful working conditions. These factors lead nurses to desert nursing for more rewarding work and influence potential nursing students to choose other careers. Nurse shortages have not developed from a decrease in the supply but rather from dramatic growth in the demand (Nurse Supply, Distribution and Requirements, 1982).

An expanded demand for nurses, a general decline in high school enrollments, and a shortage of qualified faculty combine to place additional strain on the traditional supplier of nurses -- nursing education programs. The supply of nurses is not the only factor warranting investigation in the nursing shortage. Riley (1981) clearly identifies a basic market disequilibrium. He maintains that the demand function for nurses has been ineffective in calling forth an adequate supply. In 1980, 24% of Licensed Registered Nurses (RN) were not employed in Nursing (ANA Washington Office Fact Sheet, 1980).

Annual turnover rates for Nurses were estimated at 70% in 1975 (Elnicki, 1975). Recent estimates approximate 50%. Therefore, future research must also address the prevailing demand (incentive) system. In a purely objective way, the shortage of nurses reflects the sum of the decisions made by employee and employers (Sloan, 1978).

Several recent research efforts have investigated the supply problems by analyzing educational resources and articulating methods for nurses to advance to higher educational levels with minimal loss of time or academic credit. The concept of "articulated nursing education" is based on the principles that nursing is a single profession and that any advanced education can build on the competencies a nurse has previously developed. Articulation of nursing education is introduced in the manpower study because it appears to provide a viable mechanism for integrating and retaining the existing nurse resource pool. The statewide planning committees can also consider existing nurses as well as new nurse graduates to plan for future manpower demands. The articulation of nursing education and the delineation of competencies associated with various nursing educational preparations should assist the profession in the following ways (Ingle, 1982).

1) Enable nurses to respond more readily to market signals

2) Support employers wishing to provide incentives for nurses to upgrade educational credentials and expand their competencies

3) Enable nurses, nurse educators and employers of nurses to participate in cooperative educational planning while maintaining distinct programs and practice areas

4) Improve the quality of nursing services through expanded technical and professional competencies

5) Improve the long range retention of nurses and therefore increase the total supply. Small increases in retention (e.g. 1%) are equivalent to major increases in supply (e.g. 10%.

For the next 10 to 20 years North Dakota can expect a decline in the number of high school graduates, a traditional source of nursing students. The women's movement is perceived to have its effects on females selecting traditional career roles (e.g. nursing); as more women are opting for roles traditionally associated with men. Also, the continuing problem of finding nurses willing to work in "round the clock" settings (e.g. hospitals) can be expected to worsen. Presently, 68% of nurses work in this setting (ANA Washington Office Fact Sheet, 1980).

Many of the same problems that existed in nursing in 1920 still exist today. Employers, nurses and educators all remain frustrated. New ways must be found to solve old problems. Riley (1980) argues that the profession of nursing has been a pawn in someone else's game throughout its entire history. Nursing doesn't determine its own destination, rather external forces determine the education and practice of nursing. Nursing is the only profession that has shortened the length of its educational programs over the years. Other professions in the health care field have increased their program lengths. In spite of increased supplies of graduates nursing shortages have continued. If nursing intends to adhere to the standards of a "profession", the practice of each nurse must be done at a level consistent with the amount of educational preparation.

In order to develop long-range policies the state must consider that nursing is also defined by the needs of the employers and the competencies of the nurses available and willing to practice. The actions of nursing educators, employers and practitioners must be coordinated and consistent with each other in order to maximize "appropriate" utilization and retention of nursing resources.

Nursing roles will change as health care delivery changes. New types of nursing practice will emerge in the future; (e.g. independent nursing practice, increased specialization etc.). Nursing educators are expected to respond to these changes while continuing to prepare nurses who will be practicing for 40 years or more. Without some means of systematically assessing the demand for various nursing work groups we can only expect duplication of effort, role confusion and inappropriate utilization of nursing resources by employers. Nursing manpower analysis, delineation of nursing competencies and articulation of nursing education appear to offer a means of bringing clarity to diffusion. Articulated nursing education is not a substitute for preparing more new nurses. It is a means of improving utilization of present nursing resources, and is likely to result in improved retention and upward mobility of nurses. In the long run, if the image of nursing becomes more attractive through these efforts, the supply of potential students will also increase.

The problems facing the state regarding nursing are not just problems of nursing education or nursing itself, but problems of the entire health care delivery system. Society's perception of nursing, the employer's utilization of nurses, salary and career mobility issues all combine to create problems and solutions to the predicted nursing shortages.

The manpower demand numbers will tell us "how many" nurses are needed, but it is the utilization of nursing graduates commensurate with their preparation that is one of the most critical factors in providing quality health care. The delineation of nursing competencies is the first step in articulating appropriate utilization of nurses. The manpower demand data and the delineation data can assist nurse educators in planning their educational programs. It is this combination of findings (demand & delineation) that can provide direction to the health care delivery system also.

THE ORGANIZATIONAL DEVELOPMENT MODEL

A conceptual model is needed to approach the research questions posed by the North Dakota (ND) Board of nursing in their

1983 Nursing Education Study. Organizational Development (OD) is the conceptual model this researcher selected to embrace the wide range of interacting problems confronting the Board of Nursing in its mission to the state. OD refers to a coherent, systematically planned and sustained effort at system self-study and improvement. OD requires continual search for new forms and methods of organizing. OD is a complex educational strategy intended to predict and adapt to new technologies, markets and challenges. Organizations are inherently complex. Therefore, OD research must focus on limited questions or outcomes. Decisions are made based on the research results and then the next set of questions are posed and studied. It is a continual process of collecting data, making decisions and evaluating the outcomes of those decisions.

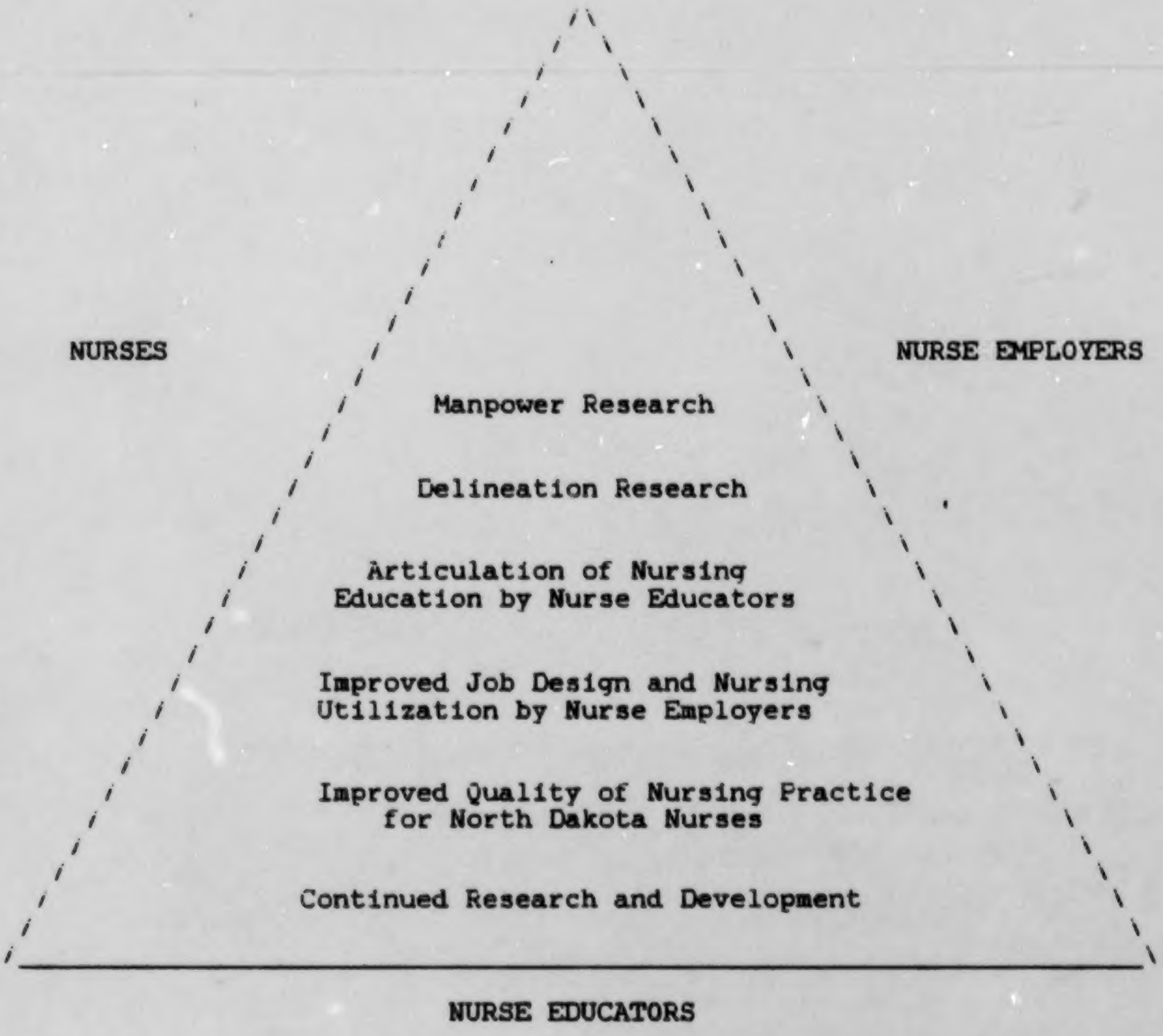
If we assume that the nursing manpower in ND is one organization divided into various human resource pools that perform different, yet coordinated functions we are left with the task of mapping out the way the various parts work together for the productivity of the whole. The two large human resource pools of nurses include: Licensed Practical Nurses (LPN) and Registered Nurses (RN). The various work groups (subgroups) include: Licensed Practical Nurses (LPN), Associate Degree Nurses (AD), Diploma Nurses (D), Baccalaureate Nurses (BS), Master's Nurses (MS), and Doctoral Nurses (PhD). Nurses from various educational backgrounds function in an even broader range of roles: General Staff Nurse, Nurse Educator, Nurse Administrator, Nurse Practitioner, Nurse Anesthetist, Clinical Specialist, Nurse Consultant, Nurse Supervisor, Research Consultant etc. Nurses from different work groups, functioning in different roles become employed in a wide range of settings: Hospitals, Nursing Homes, Universities, Private Offices, Clinics, Schools, Industry, Health Agencies etc. Therefore, OD research in nursing needs to obtain data from three key sources: 1) Nurse Educators 2) Nurse Employers and 3) Nurses (subgroups). The audience for this research includes: ND Board of Nursing, Statewide Advisory Committee, Nurse Educators, Nurse Employers and interested Nurses.

Figure 1 shows the Organizational Development Model for this research. The nursing manpower research and the nursing delineation research are used in combination to facilitate: articulation of nursing education, improved job design and utilization of nurses and improved quality of working life for nurses. This current research project is the first step of continuous research and development.

All field research is subject to certain practical considerations. The scope of the present study was narrowed to operate within the specified budgets. Berkowitz (1969) maintains that it is difficult for field research to adopt the standards of the experimental laboratory. Field investigations are performed in the context of limited control, funds, time and commitment. Another research consideration of utmost importance is that of practical

Figure 1

Organizational Development Model


NURSES
NURSE EMPLOYERS
Manpower Research
Delineation Research
Articulation of Nursing Education by Nurse Educators
Improved Job Design and Nursing Utilization by Nurse Employers
Improved Quality of Nursing Practice for North Dakota Nurses
Continued Research and Development
NURSE EDUCATORS

utility. OD research implies the continuity of data gathering and planning. Therefore, the present study was designed in a manner that is easily duplicated on a periodic basis, in a cost-effective way by the organization itself with minimal external consultation.

THE NURSING MANPOWER DEMAND MODEL

Figure 2 shows the nursing manpower demand model. This model is a matrix of selected nursing education levels, nursing roles and practice settings. Information requested of nurse employers required a breakdown of future needs for nurses by education and role. The data was also coded for practice setting type and geographic location and later pooled for regional and statewide analysis. Figure 3 shows a map of the eight planning regions in North Dakota. Size of organization and geographic location can make a substantial difference in staffing needs and availability. Therefore, the ND manpower demand model also included three sizes of hospitals (small, medium and large), two sizes of nursing homes (small and large) and location by county. The following variables were included in the model to identify data sets that did not provide consistent projections: 1) individuals totaled across educational preparations 2) individuals totaled across roles and 3) total nurses employed. Atypical data sets could be identified and the survey respondents could be contacted for clarification and verification.

Figure 2

Nursing Manpower Demand Model

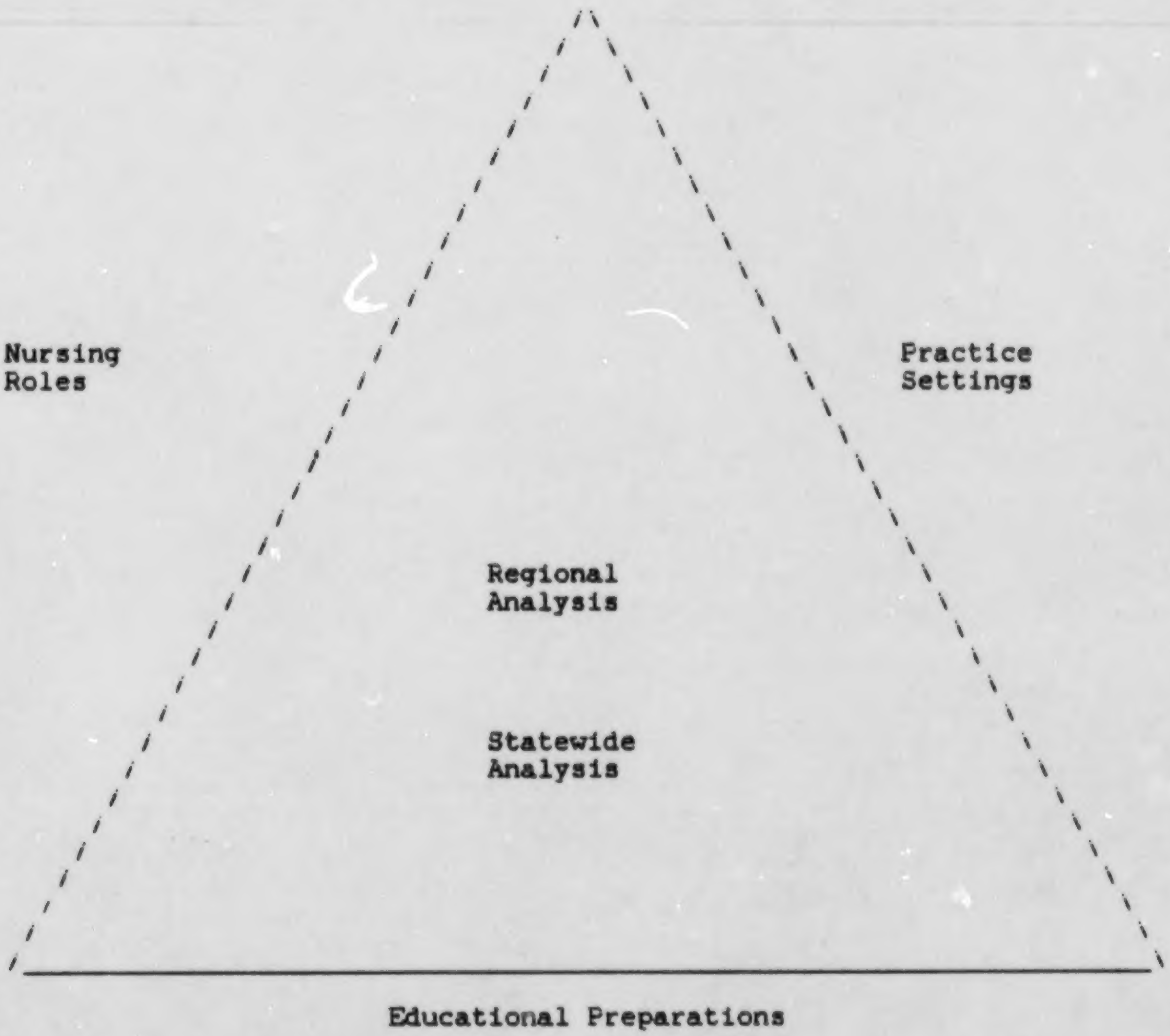
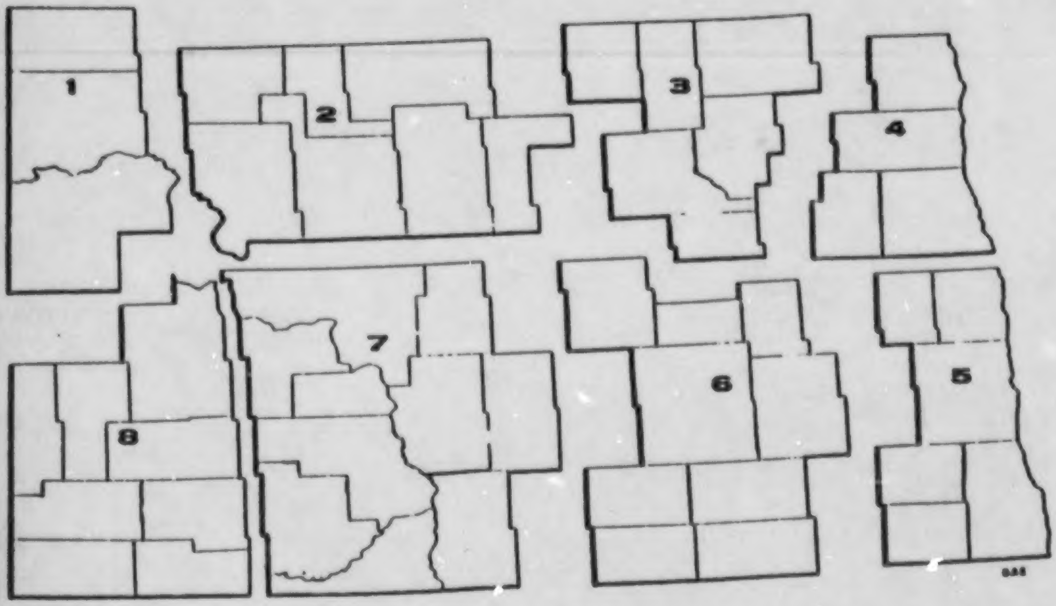


Figure 3

Map of Regions



DEFINITION OF TERMS

Terms which are frequently used and which are of particular importance in this study are defined as follows:

Articulated Nursing Education. A sequence of academic advancement planned between nursing programs to increase educational and career mobility without duplication of previous learning experience.

Associate Degree Nurse (AD). The AD nurse has completed a collegiate nursing program which is two academic to two calendar years in length and has an Associate Degree with a major in nursing. Licensed as a Registered Nurse.

Baccalaureate Degree Nurse (BS). The BS nurse has completed a collegiate nursing program which is four academic years in length and has a BS Degree with a major in nursing. Licensed as a Registered Nurse.

Budgeted Positions. Those budgeted positions currently filled, vacant or projected for nursing staff.

Career Ladder: Refers to a health care agency's system for promotion of nurses to recognize and reward individuals for education, experience and performance in nursing practice. Levels of career ladders may be differentiated by roles, functions, educational degrees or performance criteria.

Career Mobility. The ability to provide plans for upward movement, expanded roles, expanded competencies, expanded education, expanded responsibility and reward within the same field.

Clinical Specialist. A Registered Nurse with a Masters Degree in nursing who is prepared in a defined specialty area of nursing.

Diploma Nurse (D). The D nurse has completed a hospital based nursing program which is two calendar to three calendar years in length and has a diploma from the School of Nursing. Licensed as a Registered Nurse.

Doctorate Nurse (PhD). The doctoral degree nurse has completed a collegiate graduate program which is three to five academic years in length and has a doctoral degree with a major focus in nursing.

General Staff. Licensed Practical Nurses and Registered Nurses who provide nursing care to patients/clients.

Licensed Practical Nurse (LPN). The LPN nurse has completed a Practical Nurse program which is one academic to one calendar year in length. Licensed as a Licensed Practical Nurse.

__Masters Nurse (MS).__ The MS nurse has completed a collegiate graduate program which is one to two academic years in length and has an MS degree with a major in nursing.

__Net Attrition.__ Net attrition is a rate which measures the effect of various factors on in- and out-migration of nurses in the work force. The formula for net attrition rate is:

$$NAt = \frac{(St + 1) - (St + Gt)}{St}$$

Where: NAt = Net attrition rate for year t
St = Current work force in year t
St + 1 = Available work force in year t + 1
Gt = Graduations in year t

__Nurse Administrator.__ A Registered Nurse who is responsible for the management of an agency's nursing services.

__Nurse Anesthetist.__ A Registered Nurse who is engaged in the practice of administering anesthetics.

__Nurse Consultant.__ A Registered Nurse who provides professional advice or a specialty service for a fee.

__Nurse Practitioner.__ A Registered Nurse with the advanced specialized nursing education necessary to provide primary health care and/or advanced nursing care.

__Nurse Supervisor.__ A Nurse who is responsible for the management of a unit that provides nursing care.

__Nursing Instructor.__ A Registered Nurse who teaches the practice of nursing in an educational program.

__Nursing Shortage.__ The situation where employers of nurses in a given area cannot find the numbers and/or types of nurses they seek to employ for specific functions and shifts for the salaries, fringe benefits and working conditions they are prepared to offer.

__Organizational Development.__ OD is a coherent, systematically planned, sustained effort at system self-study and improvement. The goals of OD include improving both the quality of working life for the individual as well as the organizational functioning and productivity with a direct or indirect focus on educational issues. OD has been applied in government agencies, public schools, higher education, health care systems and business/industrial settings.

__Research Consultant.__ A Registered Nurse who provides professional advice in the specialty service of research or one who seeks to find scientific answers to perplexing problems.

__Turnover.__ The turnover rate for nurses can be calculated by using the following formula:

$$\text{Average Turnover Rate} = \frac{\text{Number of Employees Terminating}}{\text{Total Number of Employees}}$$

INSTRUMENT AND PROCEDURES

Instrument

The instrument for the nursing manpower demand study is provided in Appendix A. The instrument was entitled "Nursing Manpower Survey" and it consisted of 12 items. Several items included extensive subsets of categorical information. The items were selected to address the following domains:

1) practice setting type and/or size 2) geographic location 3) size of community or city 4) current nurse utilization by educational preparation 5) current budgeted vacancies by educational type 6) current nurse utilization by role type 7) projected utilzation by role and education type in 1984 and 1986 8) current turnover estimates by educational type 9) total nurses employed 10) salary differentials for educational preparation 11) full-time employment percentages and 12) starting salary for RN's and LPN's.

Delimitations of the Study

A decision was made to limit the population censused in the study due to economic and time constraints. The population censused included: Hospitals, Nursing Homes, Education Programs, Community Health Agencies, Home Health Agencies and Clinics.

Procedures for Data Collection

The Nursing Manpower Survey was sent to 210 nursing supervisors or managers working in organizations that employ a majority of nurses in North Dakota. The list of organizations surveyed was selected by the North Dakota Board of Nursing. The surveys were sent on October 12, 1983. A copy of the cover letter sent in conjunction with the survey is provided in Appendix B. Table 1 shows the frequency distribution of surveys sent to the nine

Table 1

Percentage of Nursing Manpower Surveys Returned by Organization Type and Size

Organization	Surveys Sent	Surveys Returned	Percent
Hospital 0-49 Beds	38	29	76%
Hospital 50-99 Beds	11	11	100%
Hospital >100 Beds	15	15	100%
Nursing Home/ICF 0-99 Beds	53	41	77%
Nursing Home/ICF >100 Beds	17	12	71%
Educational Programs	14	13	93%
Community Health Agency	19	12	63%
Home Health Agency	17	9	53%
Clinic	26	17	65%
Total	210	159	76%

categories of nurse employers. Hospitals and Nursing Homes/Intermediate Care Facilities (ICF) were divided into separate groups by organization size (number of beds) for analysis purposes. Table 1 shows that a substantial percentage of return was obtained in all categories surveyed. Seventy-six percent of all surveys sent were returned.

Procedures for Data Analysis

An IBM #370/158 computer located at North Dakota State University was used for data analysis. The software system utilized for this research was the Statistical Analysis System (SAS). The reliability of the data was checked for internal consistency. This consistency check involved comparisons of the number of nurses employed in various roles with the total number of nurses employed. A second consistency check required that an organization employ a specific type of nurse (e.g. AD nurses) before a zero percent turnover rate would be included in the turnover estimates.

The estimated totals were attained by taking the sample total reported and multiplying by the number of setting types there are in the state. This total is then divided by the number of surveys returned for this setting. The data was analyzed by each setting across each question. It was also analyzed by each region in North Dakota, in each setting, for every question. The data was pooled for statewide analysis for each setting for every question.

Table 2

Employed Nurses by Educational Preparation

Nurse Group	Sample Total	Percent	Estimated Total
LPN	1942	33.70%	2217
AD	640	11.11%	689
D	1733	30.07%	1996
BS	1323	22.96%	1448
MS	113	1.98%	122
PhD	11	.19%	12
Total	5762	100.00%	6484

CURRENT DEMAND FOR NURSES

Statewide Analysis

Table 2 shows the estimated totals of employed nurses in North Dakota by educational preparation. The LPN nurses comprise about one-third of the total nursing resource pool. The D nurses are the second largest subgroup. The BS nurses are the third largest subgroup. The AD nurses are the newest addition to the resource pool and they comprise about eleven percent of the total resource pool. The MS and PhD nurses comprise about two percent of the total resource pool. The reader is referred to Table 2 for sample totals and percentages for each nurse education category.

Table 3 shows the current nursing vacancies for different educational groups throughout the state. There are 88 vacancies estimated for D nurses, 85 for BS nurses and 76 for LPN nurses. There are 36 vacancies estimated for AD nurses, 18 for MS nurses, and 7 for PhD nurses. Currently, there are an estimated 310 vacancies for nurses within the population censused in this study. The reader is referred to Table 3 for sample totals and percentages.

The current (1983) statewide nursing role mix is shown in Table 4. Eighty-two percent of the total nursing resource pool are utilized as General Staff. Eight percent of the nursing resource pool are employed as Nurse Supervisors. Four percent are Nurse

Table 3

Statewide Nursing Vacancies

Nurse Group	Sample Total	Percent	Estimated Total
LPN	63	24.90	76
AD	27	10.67	36
D	68	26.88	88
BS	71	28.06	85
MS	17	6.72	18
PhD	7	2.77	7
Total	253	100.00	310

Table 4

Statewide Nursing Role Mix

Nurse Role	Sample Total	Percent	Estimated Total
General Staff	4763	82.42	5314
Clinical Specialist	13	.22	14
Nurse Instructor	252	4.36	272
Nurse Consultants	12	.21	14
Nurse Anesthetists	87	1.51	94
Nurse Supervisors	438	7.58	517
Nurse Administrators	133	2.30	168
Nurse Practitioners	38	.66	51
Research Consultants	0	.00	0
Other:	43	.74	53
Total	5779	100.00	6497

Instructors. Two percent are employed as Nurse Administrators. Two percent are Nurse Anesthetists. One percent of the total resource pool are employed as Clinical Specialists, Nurse Consultants and Nurse Practitioners. Currently, no nurses in North Dakota are employed as Research Consultants. One percent of nurses in the resource pool were employed in various "other" nursing roles. No descriptions of the "other" category were provided. The reader is referred to Table 4 for estimated statewide totals for each nursing role category.

Regional Analysis

Table 5 shows the current (1983) nursing education mix for the eight planning regions in North Dakota. LPN nurses generally comprise the largest percentage of the nursing resource pool in five of the eight regions (1,3,4,6,8). BS nurses comprise the largest percentage of the resource pool in region 2. D nurses comprise the the largest percentage of the resource pool in regions 5 and 7. The reader is referred to Table 5 for sample totals of nurses utilized in each of the eight planning regions.

Table 6 shows the current (1983) nursing vacancies for each educational category across the eight planning regions in North Dakota. The largest number of vacancies in region 1, 2 and 3 are for D nurses. The largest number of vacancies in region 4 and 8 are for LPN nurses. The largest number of vacancies in region 5, 6 and 7 are for BS nurses.

Table 5

Regional Nursing Education Mix

Region	Nurse Group	Sample Total	Percent
1	LPN	99	41.95
	AD	32	13.56
	D	83	35.17
	BS	22	9.32
	MS	0	0.00
	PhD	0	0.00
2	LPN	170	32.88
	AD	9	1.74
	D	144	27.85
	BS	181	35.01
	MS	12	2.32
	PhD	1	0.19
3	LPN	201	49.02
	AD	35	1.54
	D	137	33.41
	BS	37	9.02
	MS	0	0.00
	PhD	0	0.00
4	LPN	397	37.81
	AD	56	5.33
	D	247	23.52
	BS	306	29.14
	MS	36	3.43
	PhD	8	0.76
5	LPN	428	28.48
	AD	301	20.03
	D	444	29.54
	BS	297	19.76
	MS	32	2.13
	PhD	1	0.07
6	LPN	197	41.30
	AD	34	7.13
	D	139	29.14
	BS	97	20.34
	MS	10	2.10
	PhD	0	0.00
7	LPN	345	27.45
	AD	99	7.88
	D	447	35.56
	BS	345	27.45
	MS	20	1.59
	PhD	1	0.08
8	LPN	105	35.55
	AD	74	23.64
	D	92	29.39
	BS	38	12.14
	MS	4	1.28
	PhD	0	0.00

Table 6

Regional Nursing Vacancies

Region	Nurse Group	Sample Total	Percent
1	LPN	2	9.52
	AD	0	0.00
	D	8	38.10
	BS	4	19.05
	MS	4	19.05
	PhD	3	14.29
2	LPN	4	22.22
	AD	4	22.22
	D	6	33.33
	BS	2	11.11
	MS	2	11.11
	PhD	0	0.00
3	LPN	11	25.58
	AD	4	7.41
	D	18	41.86
	BS	9	20.93
	MS	0	0.00
	PhD	0	0.00
4	LPN	23	42.59
	AD	4	7.41
	D	8	14.81
	BS	12	22.22
	MS	4	7.41
	PhD	3	5.56
5	LPN	9	16.98
	AD	6	11.32
	D	14	26.42
	BS	21	39.62
	MS	3	5.66
	PhD	0	0.00
6	LPN	3	20.00
	AD	1	6.67
	D	0	0.00
	BS	9	60.00
	MS	2	13.33
	PhD	0	0.00
7	LPN	4	14.29
	AD	2	7.14
	D	9	32.14
	BS	11	39.29
	MS	1	3.57
	PhD	1	3.57
8	LPN	7	35.00
	AD	5	25.00
	D	5	25.00
	BS	2	10.00
	MS	1	5.00
	PhD	0	0.00

Practice Setting Analysis

Table 7 shows the current (1983) nursing education mix by organization type and size. D nurses and LPN nurses provide the largest percentage of nursing resources within small hospitals, medium hospitals, small and large nursing homes, and clinics. Large hospital nursing resources are more evenly distributed across educational types. BS and MS nurses provide the largest proportion of nursing resources within educational programs. Community health agencies and home health agencies utilize larger percentages of D and BS nurses. Table 7 shows the estimated totals of nurses with different educational preparations working in each of the nine practice settings.

Table 8 shows current (1983) nursing vacancies by organization type and size. Small hospitals show the largest number of vacancies for D nurses. Medium hospitals currently have the most vacancies for BS nurses. Large hospitals have the largest number of vacancies for BS nurses. Current vacancies within small nursing homes are largest for BS nurses. Large nursing homes have the greatest number of vacancies for D nurses. Educational programs have the most vacancies for BS and MS nurses. Current vacancies in community health agencies are predominantly for D nurses. Home health agencies have the largest number of vacancies for BS nurses. Clinics currently report no vacancies for nurses.

Table 7

Employed Nurses by Educational Preparation by Organization Type and Size

Organization	Nurse Group	Sample Total	Percent	Estimated Total
Hospital (0-49 beds)	LPN	196	34.75	257
	AD	58	10.28	76
	D	219	38.83	287
	BS	90	15.96	118
	MS	1	0.18	1
	PhD	0	0.00	0
Hospital (50-99 beds)	LPN	154	38.89	154
	AD	39	9.85	39
	D	135	34.09	135
	BS	67	16.92	67
	MS	1	0.25	1
	PhD	0	0.00	0
Hospital (>100 beds)	LPN	1,071	31.50	1,071
	AD	464	13.65	464
	D	915	26.91	915
	BS	934	27.47	934
	MS	14	0.41	14
	PhD	2	0.06	2
Nursing Home/ICF (0-99 beds)	LPN	207	44.90	268
	AD	40	8.68	52
	D	186	40.35	240
	BS	28	6.07	36
	MS	0	0.00	0
	PhD	0	0.00	0
Nursing Home/ICF (>100 beds)	LPN	160	53.16	227
	AD	23	7.64	33
	D	101	33.55	143
	BS	16	5.32	23
	MS	1	0.33	1
	PhD	0	0.00	0
Educational Programs	LPN	0	0.00	0
	AD	0	0.00	0
	D	12	6.45	13
	BS	69	37.10	74
	MS	96	51.61	103
	PhD	9	4.84	10
Community Health Agencies	LPN	13	9.85	21
	AD	3	2.27	5
	D	74	56.06	117
	BS	41	31.06	65
	MS	1	0.76	2
	PhD	0	0.00	0
Home Health Care Agencies	LPN	10	15.87	19
	AD	1	1.59	2
	D	18	28.57	34
	BS	34	53.97	64
	MS	0	0.00	0
	PhD	0	0.00	0
Clinics	LPN	131	50.38	200
	AD	12	4.62	18
	D	73	28.08	112
	BS	44	16.92	67
	MS	0	0.00	0
	PhD	0	0.00	0

Table 8

Nursing Vacancies by Organization Type and Size

Organization	Nurse Group	Sample Total	Percent	Estimated Total
Hospital (0-49 beds)	LPN	17	22.67	22
	AD	14	18.67	18
	D	29	38.67	38
	BS	15	20.00	20
	MS	0	0.00	0
	PhD	0	0.00	0
Hospital (50-99 beds)	LPN	2	14.29	2
	AD	0	0.00	0
	D	4	28.57	4
	BS	7	50.00	7
	MS	1	7.14	1
	PhD	0	0.00	0
Hospital (>100 beds)	LPN	23	39.66	23
	AD	3	5.17	3
	D	5	8.62	5
	BS	20	34.48	20
	MS	4	6.90	4
	PhD	3	5.17	3
Nursing Home/ICF (0-99 beds)	LPN	10	38.46	13
	AD	3	11.54	4
	D	5	19.23	6
	BS	8	30.77	10
	MS	0	0.00	0
	PhD	0	0.00	0
Nursing Home/ICF (>100 beds)	LPN	10	35.71	14
	AD	6	21.43	9
	D	10	35.71	14
	BS	2	7.14	3
	MS	0	0.00	0
	PhD	0	0.00	0
Educational Programs	LPN	0	0.00	0
	AD	0	0.00	0
	D	5	15.15	5
	BS	12	36.36	13
	MS	12	36.36	13
	PhD	4	12.12	4
Community Health Agencies	LPN	1	6.67	2
	AD	0	0.00	0
	D	10	66.67	16
	BS	4	26.67	6
	MS	0	0.00	0
	PhD	0	0.00	0
Home Health Care Agencies	LPN	0	0.00	0
	AD	1	25.00	2
	D	0	0.00	0
	BS	3	75.00	6
	MS	0	0.00	0
	PhD	0	0.00	0
Clinics	LPN	0	0.00	0
	AD	0	0.00	0
	D	0	0.00	0
	BS	0	0.00	0
	MS	0	0.00	0
	PhD	0	0.00	0

FUTURE DEMANDS FOR NURSES

Statewide Analysis

Table 9 shows the projected nursing manpower demand for ND by educational preparation for 1984 and 1986. The 1984 nursing demand projections indicate a need for 556 new nurses within the resource pool. The majority (193) of these nurses should have BS educational preparations. The projections also show a demand for 150 LPN nurses, 119 D nurses, 63 AD nurses, 27 MS nurses and 4 PhD nurses. The 1986 demand projections indicate a need for 871 new nurses within the resource pool. The majority (376) of these nurses should have BS educational preparation. The projections also show a demand for 203 LPN nurses, 157 D nurses, 71 MS nurses, 55 AD nurses and 9 PhD nurses. The statewide estimated totals shown in Table 9 clearly indicate that the greatest increase in demand will be for the BS nurse in both 1984 and 1986. Substantial increases in demand were also projected for LPN and D nurses. A moderate increase in demand was projected for AD nurses, and this demand was consistent across 1984 and 1986. The need for MS nurses in 1984 and 1986 will be substantial. The number of PhD nurses needed appears to be small, but it may be difficult to recruit these highly specialized nurses. It may not be essential that this manpower demand (excluding PHD nurses) be met entirely by North Dakota Nursing Education programs, although that could be a goal of educational planning resources. In any event, sufficient incentives will be necessary to attract and secure various nursing resources in demand for 1984 and 1986.

Table 9

Nursing Manpower Demand Projections by Educational Preparation for 1984 and 1986

(Numbers Reported are Estimated Totals)

Nurse Group	1984	1986
LPN	150	203
AD	63	55
D	119	157
BS	193	376
MS	27	71
PhD	4	9
Total	556	871

Table 10 presents the nursing demand projections by role and educational preparation. An inspection of Table 10 shows that a majority (383) of new nurses employed in 1984 will function as general staff. In 1986, 595 of the new nurses needed will function as general staff. The new general staff resource pool is estimated to consist primarily of LPN and BS nurses. The number of BS nurses needed for new general staff positions is estimated to more than double from 1984 to 1986.

A demand for 10 Clinical Specialists with MS backgrounds is projected for 1984. Seven more clinical specialists are estimated to be in demand by 1986, two of which should have PhD educational preparation. Thirty-two new nurse instructors will be in demand by 1984. A majority (18) of these instructors should have BS educational preparation. The 1986 projections indicated that 42 new nurse instructors will be in demand. A majority (26) of these instructors should have MS educational preparations. Of the 32 nursing instructors projected for 1984, 22 are needed within educational programs. Of the 42 nursing instructors projected for 1986, 30 are needed within educational programs. Apparently, some respondents did not follow the operational definition of nursing instructor.

Table 10 shows an estimated demand for 8 new nurse consultants in 1984 and 13 in 1986. A majority of new nurse consultants should have MS educational preparations. The demand for nurse anesthetists will increase by 16 for 1984 and by 20 for 1986. A majority of new nurse anesthetists will have BS educational backgrounds. The 1984 projections show an increased demand for 60 new nurse supervisors. A majority of these supervisors should have D and BS educational preparations. Seventy-six new nurse supervisors will be in demand by 1986. The BS educational preparation will provide the largest proportion. Thirteen new nurse administrators will be needed in 1984. Most of these administrators should have D or BS educational backgrounds. In 1986, 29 new nurse administrators will be in demand. A majority (17) of these administrators should have BS educational preparation.

Nine new nurse practitioners are estimated to be in demand in 1984. The educational backgrounds for this new resource pool will be distributed across nursing educational backgrounds, but no PhD nurses are projected for this role. By 1986, 13 new nurse practioners will be in demand and a majority (8) should have BS educational backgrounds. Currently, there are no nurses employed in North Dakota as research consultants. In 1984, one PhD nurse is projected to be in demand as a research consultant. In 1986, there is an estimated demand for six new research consultants. A majority (5) of the new nursing research consultants should have MS educational preparations. The nursing manpower projections indicate that 28 new nursing positions will be in demand for various "other" roles. A majority (18) of these positions will require LPN educational preparations. Fifty-five new "other role" positions will be in demand by 1986. The reader is referred to Table 10 for the distribution of demand for the "other role" positions. No descriptions of the "other role" positions were provided by the respondents.

Table 10

Nursing Manpower Demand Projection by Education Level and Role for 1984 and 1986

(Numbers Reported are Estimated Totals)

Nursing Role	Education	1984	1986
General Staff		383	595
	LPN	132	177
	AD	48	30
	D	78	116
	BS	125	272
Clinical Specialists		10	17
	MS	10	15
	PhD	0	2
Nursing Instructors		32	42
	AD	1	2
	D	3	3
	BS	18	8
	MS	9	26
	PhD	1	3
Nurse Consultants		8	13
	BS	2	2
	MS	5	10
	PhD	1	1
Nurse Anesthetists		16	20
	BS	16	17
	MS	0	3
Nurse Supervisors		60	76
	AD	19	12
	D	25	25
	BS	23	35
	MS	3	4
	PhD	0	0
Nurse Administrators		13	29
	AD	1	3
	D	5	4
	BS	5	17
	MS	1	4
	PhD	1	1
Nurse Practitioners		9	13
	AD	2	2
	D	2	2
	BS	4	8
	MS	1	1
	PhD	0	0
Research Consultants		1	6
	BS	0	0
	MS	0	5
	PhD	1	1
Other: ____________		28	55
	LPN	18	26
	AD	2	6
	D	3	7
	BS	5	14
	MS	0	2
	PhD	0	0

Regional Analysis

Table 11 shows the nursing manpower demand projections by educational preparation for each planning region for 1984 and 1986. A brief discussion of demand projections based on sample totals for each region is presented in this section of the report.

Region 1 projections show that the greatest demand in this area will be for LPN nurses in 1984. The largest increase in demand in 1986 is projected for LPN nurses and BS nurses.

Region 2 projections show the largest increase in demand for D nurses in 1984. The largest increase in demand for 1986 is for D and MS nurses. This region currently has difficulty obtaining MS nurses.

The 1984 projections for Region 3 estimate the largest increase in demand to be for D nurses. The demand for D nurses is consistent through 1986. The demand for BS nurses in this region will triple by 1986.

Region 4 shows the largest increase in demand for BS nurses in 1984 and 1986. This large demand for new BS nurses will nearly triple between 1984 and 1986.

Region 5 estimates show the largest increase in demand for BS nurses in 1984. The demand for BS nurses decreases significantly through 1986. D nurses show the largest demand for this region in 1986.

Region 6 estimates show the largest increase in demand for LPN and BS nurses in 1984. The demand for LPN nurses and BS will double by 1986 with BS nurses showing the largest increase.

Region 7 estimates indicate that 1984 demands for new nursing resources will be evenly distributed across LPN, D and BS educational backgrounds. The largest increase in demand for 1986 will be for BS nurses. The number of BS nurses needed in this region will double by 1986.

Region 8 projections indicate that demands for new nurses will be largest for LPN nurses in 1984. The 1986 projections for this region show that the demands will be evenly distributed across LPN, D and BS nurses.

Table 11

Nursing Manpower Demand Projections by Region for 1984 and 1986

(Numbers Reported are Sample Totals)

Region	Education	1984	1986
1	LPN	16	17
	AD	1	2
	D	1	5
	BS	1	13
	MS	0	2
	PhD	0	0
2	LPN	6	4
	AD	9	3
	D	33	17
	BS	9	11
	MS	1	16
	PhD	0	0
3	LPN	16	12
	AD	4	2
	D	29	26
	BS	9	32
	MS	0	3
	PhD	0	0
4	LPN	25	45
	AD	8	18
	D	8	28
	BS	62	183
	MS	8	17
	PhD	0	0
5	LPN	18	10
	AD	26	15
	D	19	18
	BS	44	10
	MS	4	11
	PhD	0	1
6	LPN	23	47
	AD	1	5
	D	11	16
	BS	25	61
	MS	4	8
	PhD	0	0
7	LPN	13	15
	AD	4	1
	D	10	12
	BS	11	23
	MS	6	12
	PhD	4	6
8	LPN	10	14
	AD	6	4
	D	5	10
	BS	7	12
	MS	1	1
	PhD	0	1

Practice Setting Analysis

Table 12 shows the future nursing manpower demand by organization type and size for 1984 and 1986. The reader is referred to Appendix C for a role by education by setting analysis. A brief discussion of future nursing demands based on estimated totals for nine practice settings is presented in this section of the report.

Small hospitals show the largest demands for LPN, D and BS nurses in 1984. The 1986 demand projections show the largest increase in demand for BS nurses within this setting. The demand for AD nurses in this setting is projected to decrease by 1986.

Medium hospitals project the largest demands for LPN and BS nurses in 1984. In 1986, the largest increase in demand is projected for BS nurses. The demand for BS nurses in this setting will double between 1984 and 1986.

Large hospitals project the largest demand for BS nurses in 1984 and 1986. The demand for BS nurses in this setting will more than double between 1984 and 1986. The demand for MS nurses within these settings will nearly triple between 1984 and 1986.

Small nursing homes project the largest demands for LPN and D nurses in 1984 and 1986. AD nurses and BS nurses show moderate increases in demand projected for the near future.

Large nursing homes project increases in demand that are largest LPN and D nurses for 1984 and 1986. In 1986, the demand will be more evenly distributed across LPN, AD, D and BS nurses. BS nurses show the largest increase in demand between 1984 and 1986.

Educational programs project the largest demand for BS nurses in 1984. The demand for BS nurses in 1986 will decrease signficantly. In 1986, MS and PhD nurses show the largest increases in demand. The demand for MS will nearly triple between 1984 and 1986 and the demand for PhD nurses will double. There are two educational programs in the state that will produce MS nurses. One MS program will graduate X nurses in 1984. All PhD nurses will have to be recruited from out of state. Currently there is a substantial shortage of BS, MS and PhD nurses within educational programs. The current and predicted shortages within this setting presents a significant concern related to expansion of specific nursing resources for the state.

Community health agencies project the largest demand for BS nurses in 1984 and 1986. Home health care agencies project the largest demand for BS nurses in 1984 and 1986.

Clinics show the largest increase in demand for LPN nurses in 1984 and 1986. The demand for LPN nurses within these settings will nearly double between 1984 and 1986.

Table 12

Nursing Manpower Demand Projections by Organization Type and Size for 1984 and 1986

(Numbers Reported are Estimated Totals)

Organization	Nurse Group	1984	1986
Hospital (0-49 beds)	LPN	31	36
	AD	21	12
	D	33	36
	BS	30	46
	MS	0	1
	PhD	0	0
Hospital (50-99 beds)	LPN	7	7
	AD	0	0
	D	4	4
	BS	8	19
	MS	2	0
	PhD	0	0
Hospital (>100 beds)	LPN	27	44
	AD	22	17
	D	6	27
	BS	95	219
	MS	15	42
	PhD	0	1
Nursing Home/ICF (0-99 beds)	LPN	36	41
	AD	6	10
	D	40	55
	BS	11	20
	MS	0	0
	PhD	0	0
Nursing Home/ICF (>100 beds)	LPN	18	18
	AD	11	14
	D	18	15
	BS	5	19
	MS	0	0
	PhD	0	0
Educational Programs	LPN	0	0
	AD	0	0
	D	3	0
	BS	13	6
	MS	8	23
	PhD	3	6
Community Health Agencies	LPN	0	1
	AD	2	1
	D	1	4
	BS	11	19
	MS	2	4
	PhD	1	1
Home Health Care Agencies	LPN	1	6
	AD	1	0
	D	7	4
	BS	12	18
	MS	0	1
	PhD	0	0
Clinics	LPN	30	50
	AD	0	1
	D	7	12
	BS	8	10
	MS	0	0
	PhD	0	0

TURNOVER AND SALARY DATA

Turnover Estimates

The average percent turnover for nurses with different educational backgrounds is shown in Table 13. The LPN nurses had the highest turnover rate (8.31%) and the PhD nurses had the lowest turnover rate (.44%). If organizations reported that they did not currently employ any nurses in a given educational category they were not included in the turnover calculations. However, it is possible that organizations may have employed a specific type of nurse in 1982, but were excluded because they did not employ that type of nurse in 1983. Erroneous exclusion would likely be very infrequent. Many respondents did not provide turnover data. Therefore, turnover estimates must be viewed with moderate validity relative to the number of respondents reporting data.

The cost of replacing a nursing employee was estimated at $2,437.00 in a 1983 American Hospital Association study. It is estimated that 213 LPN nurses turnover in ND each year. Therefore, LPN turnover costs ND health organizations surveyed in this study about $519,081.00 per year. Approximately 244 RN nurses leave their organizations each year. RN turnover in ND is estimated to cost ND health organizations surveyed in this study $594,628.00 per year. The actual dollar cost of replacing nurses in the organizations surveyed can be estimated at $1,113,709.00 per year. These estimates do not include organizational costs associated with lost productivity. A

Table 13

Average Percentage of Turnover by Educational Type

Nurse Group	Number of Respondents	Average Percent Turnover
LPN	114	8.31%
AD	76	3.55%
D	114	4.57%
BS	94	6.10%
MS	37	1.32%
PhD	9	.44%

** If organizations reported that they did not employ any nurses of a given educational type they were not included in the average percentage calculations.

certain amount of turnover is unavoidable (e.g. spouses leaving the state, death etc). In view of the estimated organizational dollar costs, nursing turnover in ND may warrant further investigation.

Table 14 shows the turnover percentages reported across nurses in each setting. The number of respondents is also reported. Small nursing homes appear to have the highest turnover percentages across nurses. Small hospitals also appear to have substantial turnover across nurses. Educational programs in ND appear to have the largest turnover problem with BS nurses. Clinics appear to have the largest turnover problem with AD nurses. LPN nurses usually present the largest turnover problem to to most health organizations in ND.

Salary Information

Table 15 shows the percentage of organizations paying a salary differential for educational preparation. Educational programs were most likely to pay salary differentials for educational preparation. Large hospitals were least likely to pay salary differentials for educational preparation. It appears that some organizations (e.g. Nursing Homes) may have viewed the differential question as referring to LPN and RN distinctions. Table 16 shows the percentage of full-time employees by organization type and size.

Table 14

Average Percentage of Turnover by Organization Type and Size

Organization	Type	Number of Respondents	Average Percent Turnover
Hospitals (0-49 Beds)	LPN	24	9.79%
	AD	23	.47%
	D	25	4.44%
	BS	24	5.50%
	MS	0	0.00%
	PhD	0	0.00%
Hospitals (50-99 beds)	LPN	9	4.33%
	AD	5	1.60%
	D	8	2.38%
	BS	7	3.43%
	MS	0	0.00%
	PhD	0	0.00%
Hospitals (>100 beds)	LPN	10	7.60%
	AD	10	3.50%
	D	10	3.40%
	BS	8	5.63%
	MS	5	1.00%
	PhD	2	2.00%
Nursing Home/ ICF (0-99 beds)	LPN	33	9.18%
	AD	16	6.43%
	D	29	7.34%
	BS	13	6.77%
	MS	0	0.00%
	PhD	0	0.00%
Nursing Home/ ICF (>100 beds)	LPN	10	13.10%
	AD	6	2.33%
	D	8	5.00%
	BS	5	2.60%
	MS	1	0.00%
	PhD	0	0.00%
Educational Programs	LPN	0	0.00%
	AD	0	0.00%
	D	5	1.20%
	BS	9	10.11%
	MS	10	4.40%
	PhD	3	2.67%
Community Health Agencies	LPN	6	16.67%
	AD	3	0.00%
	D	10	8.50%
	BS	10	8.50%
	MS	1	0.00%
	PhD	0	0.00%
Home Health Care Agencies	LPN	6	8.50%
	AD	2	0.00%
	D	7	.14%
	BS	6	6.66%
	MS	2	0.00%
	PhD	2	0.00%
Clinics	LPN	14	.92%
	AD	9	11.00%
	D	12	1.00%
	BS	12	4.67%
	MS	0	0.00%
	PhD	0	0.00%

** If organizations reported that they did not employ any nurses of a given educational type they were not included in the average percentage calculations.

Table 15

Nursing Salary Differentials for Educational Preparation by Organization Type and Size

Organization	Yes	No	No Response
Hospitals (0-49 beds)	6.90%	93.10%	0.00%
Hospitals (50-99 beds)	9.09%	90.91%	0.00%
Hospitals (>100 beds)	6.67%	93.33%	0.00%
Nursing Home/ICF (0-99 beds)	46.34%	51.22%	2.44%
Nursing Home/ICF (>100 beds)	33.33%	66.67%	0.00%
Educational Programs	76.92%	23.08%	0.00%
Community Health Agencies	33.33%	66.67%	0.00%
Home Health Care Agencies	22.22%	77.78%	0.00%
Clinics	29.41%	58.82%	11.77%

Table 16

Average Percentage of Full-time Employees by Organization Type and Size

Organization	Percent Full-Time Employees
Hospitals (0-49 beds)	37.11%
Hospitals (50-99 beds)	45.45%
Hospitals (>100 beds)	61.57%
Nursing Home/ICF (0-99 beds)	26.51%
Nursing Home/ICF (>100 beds)	28.41%
Educational Programs	72.50%
Community Health Agencies	48.25%
Home Health Care Agencies	44.11%
Clinics	58.69%
All Groups	42.96%

Educational programs were most likely to employ nurses on a full time basis. However, full-time employment in this setting could be nine or ten month contracts. Nursing homes were least likely to employ nurses on a full-time basis. Table 17 shows the average starting salaries for RN and LPN nurses in North Dakota. The highest average starting salaries for RN and LPN nurses were reported by large hospitals. The lowest average starting salaries for RN nurses were reported by clinics. The lowest average starting salaries for LPN nurses were reported by community health agencies, although this agency may be reporting part-time salary totals. Educational program salary estimates may be based on nine, ten or twelve month contracts.

Nursing Employment Trends

Table 18 shows the employment trend for nurses with different education backgrounds in North Dakota in the near future. The predicted shifts in educational mix show a slight decrease in the proportion of LPN, AD and D nurses within the total nursing resource pool. The BS nurse group shows an upward shift of 2.5% and the MS nurse group shows an upward shift of .8%. Table 19 shows the employment trend for nurses functioning in different roles in North Dakota in the near future. There is a slight downward shift in general staff nurses (1.62%). All other nursing roles show a slight upward shift.

Table 17

Average Starting Salary for Licensed Practical Nurses and Registered Nurses by Organization Type and Size

Organization	Average Starting Salary	
	RN	LPN
Hospitals (0-49 beds)	$15,740	$11,464
Hospitals (50-99 beds)	$17,090	$12,636
Hospitals (>100 beds)	$17,923	$13,142
Nursing Home/ICF (0-99 beds)	$15,342	$11,894
Nursing Home/ICF (>100 beds)	$16,666	$13,000
Educational Programs	$16,444	
Community Health Agencies	$13,888	$ 6,250
Home Health Care Agencies	$16,166	$11,750
Clinics	$13,312	$10,466
All Groups	$15,688	$11,323

Table 18

Employment Trends by Educational Preparation

Nurse Group	1983	1984	1986
LPN	33.70%	33.09%	32.29%
AD	11.11%	11.13%	10.55%
D	30.07%	29.32%	28.59%
BS	22.96%	23.99%	25.56%
MS	1.98%	2.24%	2.78%
PhD	.19%	.23%	.27%
Total	100.01%	100.00%	100.04%

* Percentages do not total 100% due to rounding.

Table 19

Employment Trends by Nursing Role

Nurse Role	1983	1984	1986
General Staff	82.42%	81.35%	80.80%
Clinical Specialist	.22%	.36%	.44%
Nurse Instructor	4.36%	4.52%	4.45%
Nurse Consultants	.21%	.30%	.37%
Nurse Anesthetists	1.51%	1.62%	1.61%
Nurse Supervisors	7.58%	7.78%	7.73%
Nurse Administrators	2.30%	2.31%	2.42%
Nurse Practitioners	.66%	.70%	.74%
Research Consultants	.00	.01%	.08%
Other:	.74%	1.04%	1.35%
Total	100.00%	99.99%	99.99%

* Percentages do not total 100% due to rounding

PART B

NURSING MANPOWER RESOURCES

Part B of this study addresses the nursing manpower resources of North Dakota. It provides an analysis of the supply of nurses known to be available as of June, 1983. It also estimates the supply of nurses that is expected to be available in 1984 and 1986 assuming present trends continue. Methodology for projecting manpower supply in North Dakota is discussed. Comparisons of nursing manpower demands and resources are presented for statewide analysis for 1984 and 1986.

Nurse Licensure

An annual analysis of nurse licensure data has been done by the Board of Nursing for many years. In 1983, a computer was installed which will facilitate comprehensive analysis of this data in the future. The licensure data include many variables essential to nurse manpower planning. To be employed in nursing in North Dakota an individual must have active licensure status. The licensure data is self-reported. Some nurses holding licensure are not currently employed. Some of the individuals holding licenses have moved out of state, but are still tabulated in current licensure data. In other words, nursing licensure in North Dakota is not synonymous with current or potential employment in North Dakota.

Of the 6,188 RN nurses licensed in North Dakota as of June, 1983 only 4,865 were employed in North Dakota part-time or full-time. Of the 3,085 LPN nurses licensed 2,424 were employed part-time or full-time in North Dakota. The licensure data shows that 7,289 nurses were employed in North Dakota as of June, 1983. The estimated totals obtained in this study approximate the licensure data. The estimated totals for this study were obtained in October, 1983.

Nurse Graduations

The use of nursing program graduations, both past and estimated future, is affected by the number of educational programs operating within the state. Table 20 shows the number of educational programs and the number of graduates passing licensure examinations in North Dakota for 1981, 1982 and 1983. The average number of LPN graduates passing licensure exams each year is 237. The average number of AD graduates passing the examination each year is 83. An average of 119 D graduates pass the licensure examination each year. An average of 173 BS graduates pass the licensure exam each year. An average of 375 nurse graduates pass the exam each year. An average of 612 nurse graduates are licensed into the total resource pool each year.

Table 20

Nurse Graduates Passing Licensure Exams in 1981, 1982 and 1983

	1981		1982		1983		
Nurse Group	P	N	P	N	P	N	Mean
LPN	5	180	6	250	6	280	237
AD	2	75	2	80	2	95	83
D	3	112	3	122	3	122	119
BS	4	161	4	176	4	183	173
Total	14	528	15	628	15	680	612

Where: P = Number of Educational Programs
N = Number of Graduates Passing Licensure Examination

Methodology for Projecting Nursing Manpower Supply

Three sets of data were obtained for making nursing manpower resource projections:

1. Nursing resources from past years
2. Nursing graduates from past years plus the projected number of future graduates
3. The "net attrition adjustment"--a rate which measures the the effect of various factors on the in- and out-migration of nurses in the work force

Data from 1981, 1982 and 1983 were used to calculate the net attrition rate as well as the projected nursing graduations in North Dakota. The formula for the net attrition rate is:

$$NAt = \frac{(St + 1) - (St + Gt)}{St}$$

Where: NAt = Net attrition rate for year t
St = Current work force in year t
$St+1$ = Available work force in year $t + 1$
Gt = Graduations in year t

The net attrition rate, along with actual supply of nurses in a beginning year and the projected number of nursing graduates for subsequent years is used to estimate the number of nurses available in future years. A separate net attrition rate was calculated for each education level of nurses. A positive net attrition rate indicates that the number of nursing resources is increasing annually; a negative net attrition rate indicates that the number is decreasing. Table 21 shows the Nursing Manpower Resource calculations for LPN nurses. There is an average net attrition rate of -4.7 percent for

Table 21

Nursing Manpower Resource Calculations for Licensed Practical Nurses for 1984 and 1986.

Average Net Attrition Rate = -4.7%

Year		Headcount
1982	Available Supply	3019
1982	Graduates Licensed	250
1983	Estimated Total Supply	3269
1983	Net Attrition Adjustment	-154
1983	Available Supply	3115
1983	Available Supply	3115
1983	Graduates Licensed	280
1984	Estimated Total Supply	3395
1984	Net Attrition Adjustment	-160
1984	Available Supply	3235
1984	Available Supply	3235
1984	Projected Graduates Licensed	237
1985	Estimated Total Supply	3472
1985	Net Attrition Adjustment	-163
1985	Available Supply	3309
1985	Available Supply	3309
1985	Projected Graduates Licensed	237
1986	Estimated Total Supply	3546
1986	Net Attrition Adjustment	-167
1986	Available Supply	3379

LPN nurses. Table 22 shows the Nursing Manpower Resource calculations for AD nurses. There is an average net attrition rate of -3.9 percent for AD nurses. Table 23 shows the Nursing Manpower Resource calculations for D nurses. There is an an average net attrition rate of -4.5 percent for D nurses. Table 24 shows the Nursing Manpower Resource calculations for BS nurses. There is an average net attrition rate of -1.4 percent for BS nurses. Table 25 shows the Nursing Manpower Resource calculations for the MS nurses. There is an average net attrition rate of + 10.2 percent for MS nurses. Table 26 shows the Nursing Manpower Resource calculations for PhD nurses. There is an average net attrition rate of + 13.3 percent for PhD nurses.

Table 27 shows the net out-migration of North Dakota Nurses throughout the last five years. RN nurses show a average net out-migration of 186 nurses per year. LPN nurses show an average net out-migration of 116 nurses per year. The net attrition formula takes net out-migration data into account for each education level. The general trend appears to be decreasing net out-migration of North Dakota nurses.

Table 22

Nursing Manpower Resource Calculations for Associate Degree Nurses for 1983 through 1986.

Average Net Attrition Rate = -3.9%

Year		Headcount
1982	Available Supply	686
1982	Graduates Licensed	80
1983	Estimated Total Supply	766
1983	Net Attrition Adjustment	-30
1983	Available Supply	736
1983	Available Supply	648
1983	Graduates Licensed	95
1984	Estimated Total Supply	743
1984	Net Attrition Adjustment	-29
1984	Available Supply	717
1984	Available Supply	717
1984	Projected Graduates Licensed	83
1985	Estimated Total Supply	800
1985	Net Attrition Adjustment	-30
1985	Available Supply	770
1985	Available Supply	770
1985	Projected Graduates Licensed	83
1986	Estimated Total Supply	853
1986	Net Attrition Adjustment	-33
1986	Available Supply	820

Table 23

Nursing Manpower Resource Calculations for Diploma Nurses for 1983 through 1986.

Average Net Attrition Rate = -4.5%

Year		Headcount
1982	Available Supply	2800
1982	Graduates Licensed	122
1983	Estimated Total Supply	2922
1983	Net Attrition Adjustment	-131
1983	Available Supply	2791
1983	Available Supply	2791
1983	Graduates Licensed	122
1984	Estimated Total Supply	2913
1984	Net Attrition Adjustment	-131
1984	Available Supply	2782
1984	Available Supply	2782
1984	Projected Graduates Licensed	119
1985	Estimated Total Supply	2901
1985	Net Attrition Adjustment	-131
1985	Available Supply	2770
1985	Available Supply	2770
1985	Projected Graduates Licensed	119
1986	Estimated Total Supply	2889
1986	Net Attrition Adjustment	-130
1986	Available Supply	2759

Table 24

Nursing Manpower Resource Calculations for Baccalaureate Nurses for 1983 through 1986.

Average Net Attrition Rate = -1.4%

Year		Headcount
1982	Available Supply	1248
1982	Graduates Licensed	176
1983	Estimated Total Supply	1424
1983	Net Attrition Adjustment	-20
1983	Available Supply	1404
1983	Available Supply	1404
1983	Graduates Licensed	183
1984	Estimated Total Supply	1587
1984	Net Attrition Adjustment	-22
1984	Available Supply	1565
1984	Available Supply	1565
1984	Projected Graduates Licensed	173
1985	Estimated Total Supply	1738
1985	Net Attrition Adjustment	-24
1985	Available Supply	1714
1985	Available Supply	1714
1985	Projected Graduates Licensed	173
1986	Estimated Total Supply	1887
1986	Net Attrition Adjustment	-26
1986	Available Supply	1861

Table 25

Nursing Manpower Resource Calculations for Masters Nurses for 1983 through 1986.

Average Net Attrition Rate = +10.2%

Year		Headcount
1982	Available Supply	85
1982	Graduates Licensed	0
1983	Estimated Total Supply	85
1983	Net Attrition Adjustment	+8
1983	Available Supply	93
1983	Available Supply	93
1983	Graduates Licensed	0
1984	Estimated Total Supply	93
1984	Net Attrition Adjustment	+9
1984	Available Supply	102
1984	Available Supply	102
1984	Projected Graduates Licensed	0
1985	Estimated Total Supply	102
1985	Net Attrition Adjustment	+10
1985	Available Supply	112
1985	Available Supply	112
1985	Projected Graduates Licensed	0
1985	Estimated Total Supply	112
1986	Net Attrition Adjustment	+11
1986	Available Supply	123

Table 26

Nursing Manpower Resource Calculations for Doctoral Nurses for 1983 through 1986.

Average Net Attrition Rate = +13.3%

Year		Headcount
1982	Available Supply	10
1982	Graduates Licensed	0
1983	Estimated Total Supply	10
1983	Net Attrition Adjustment	+1
1983	Available Supply	11
1983	Available Supply	11
1983	Graduates Licensed	0
1984	Estimated Total Supply	11
1984	Net Attrition Adjustment	+1
1984	Available Supply	12
1984	Available Supply	12
1984	Projected Graduates Licensed	0
1985	Estimated Total Supply	12
1985	Net Attrition Adjustment	+2
1985	Available Supply	14
1985	Available Supply	14
1985	Projected Graduates Licensed	0
1986	Estimated Total Supply	14
1986	Net Attrition Adjustment	+2
1986	Available Supply	16

Table 27

Net Out-Migration of Nurses from 1979 through 1983

Year	RN Nurses	LPN Nurses	Total
1979	-214	-157	-371
1980	-225	-140	-365
1981	-173	-111	-284
1982	-175	-87	-262
1983	-142	-87	-229
Mean	-186	-116	-302

COMPARISONS OF NURSING MANPOWER DEMANDS AND RESOURCES BY STATEWIDE ANALYSIS IN 1984 AND 1986

Table 28 presents comparisons of North Dakota projected nursing manpower demands and projected nursing manpower supply for 1984 and 1986. All nursing manpower demand and resource calculations are for individual nurses not full-time equivalents. The comparisons have been made for statewide analysis. Regional supply data was not available due to current limitations in the Board of Nursing computer programming. The licensure data is currently organized for statewide analysis. Future software programming with the licensure data could organize regional data base retrieval, if nursing research and planning includes a regional focus. Nursing shortage and surplus figures for each education level designate individual nurses, not full-time equivalents.

The demand figures for 1984 were obtained by adding the projected demand for new nurses to the 1983 available supply. This sum is then subtracted from the calculated available supply for 1984. There will be an estimated shortage of 30 LPN nurses and 263 RN nurses. The largest shortage will occur in D nurses (128). There will be a shortage of 82 AD nurses, 32 BS nurses, 18 MS nurses and 3 PhD nurses. The total nursing shortage for North Dakota in 1984 is estimated at 293 nurses.

Table 28

Statewide Comparisons of Nursing Manpower Demands and Resources in 1984 and 1986

1984

Nurse Group	Demand	Supply	-Shortage/+Surplus
LPN	3,265	3,235	-30
AD	799	717	-82
D	2,910	2,782	-128
BS	1,597	1,565	-32
MS	120	102	-18
PhD	15	12	-3
Total RN	5,441	5,178	-263
Total All Groups	8,706	8,413	-293

1986

Nurse Group	Demand	Supply	-Shortage/+Surplus
LPN	3,318	3,379	+61
AD	791	820	+29
D	2,948	2,759	-189
BS	1,780	1,861	+81
MS	164	123	-41
PhD	20	16	-4
Total RN	5,703	5,579	-124
Total All Groups	9,021	8,958	-63

The demand figures for 1986 were obtained by adding the projected demand for new nurses to the 1983 available supply. This sum is then subtracted from the calculated available supply for 1986. There will be an estimated surplus of 61 LPN nurses and an estimated shortage of 124 RN nurses. The largest shortage will occur in D nurses (189). The next largest shortage will be MS nurses (41). There is also a predicted shortage of 4 PhD nurses at that time. There will be an estimated surplus of 29 AD nurses and 81 BS nurses. The total nursing shortage for North Dakota in 1986 is estimated at 63 nurses.

PART C

SUMMARY

This study has addressed the nursing manpower demands and resources for North Dakota using a research model developed specifically for this state. The purpose of the study has been to project the nursing manpower needed in North Dakota by 1984 and 1986. Findings of the study can be used by the Statewide Advisory Committee, the North Dakota Board of Nursing, Nurse Employers and Nurse Educators to formulate planning guidelines and policies for further development of the nursing education system and the utilization of nurses within practice settings at state, regional and local levels.

The rationale underlying projections of nursing manpower needed addresses: 1) types of educational preparation needed 2) role function and 3) practice setting. Nursing demands have been estimated by educational level by nursing supervisors for nine practice settings. The data were then analyzed for each of eight planning regions in the state. The data were then pooled for statewide analysis. The research model assumes that the distribution of nurses needed will vary depending upon the type of practice setting, the assumed responsibilities associated with different nursing roles and the knowledge/content of nursing education preparation. The rationale for determining nursing resources within the state addresses past nursing manpower supply, past nursing graduations and estimated future nursing graduations. The nursing demand projections and nursing resource calculations can then be compared to determine predicted shortages or surpluses.

Findings of the study indicate a statewide shortage of 30 LPN nurses and 263 RN nurses for 1984. The RN nurse shortage includes:

1. 82 AD nurses
2. 128 D nurses
3. 32 BS nurses
4. 18 MS nurses
5. 3 PhD nurses

Findings of the study indicate a statewide surplus of 61 LPN nurses and a shortage of 124 RN nurses for 1986. The RN nurse shortage includes:

1. a surplus of 29 AD nurses
2. a shortage of 189 D nurses
3. a surplus of 81 BS nurses
4. a shortage of 41 MS nurses
5. a shortage of 4 PhD nurses

Statewide planning should address current shortages as well as predicted shortages. The most immediate problem confronting statewide supply of appropriate nursing personnel is the current shortage of nursing instructors within educational programs within the state. Statewide planning needs to address various methods of obtaining 13 BS nurse instructors, 5 MS nurse instructors and 4 PhD nurse instructors for current positions available in nurse education programs in the state. The nurse instructors are needed to produce expanded numbers of nurse graduates from various programs.

Statewide Vacancies Prioritized by Estimated Total Number:

1. 88 D Nurses
2. 85 BS Nurses
3. 76 LPN Nurses
4. 36 AD Nurses
5. 18 MS Nurses
6. 7 PhD Nurses

Statewide Demand Projections Prioritized by Number Needed in 1984:

1. 193 BS Nurses
2. 150 LPN Nurses
3. 119 D Nurses
4. 63 AD Nurses
5. 27 MS Nurses
6. 4 PhD Nurses

Statewide Demand Projections Prioritized by Number Needed in 1986:

1. 376 BS Nurses
2. 203 LPN Nurses
3. 157 D Nurses
4. 71 MS Nurses
5. 55 AD Nurses
6. 9 PhD Nurses

Licensed Practical Nurses

There are currently 76 estimated vacancies for LPN nurses in the state. The majority of LPN vacancies exist in small and large hospitals in regions 3, 4 and 5.. There are 150 new LPN positions projected for 1984. Most of these new positions were for hospitals (small and large) and small nursing homes within regions 1, 3, 4, 5 and 6. There are 203 new LPN positions projected for 1986. Most of these new positions were for clinics, hospitals (small & large), and small nursing homes within regions 4 and 6.

Associate Degree Nurses

There are currently 36 estimated vacancies for AD nurses in the state. The majority of AD vacancies exist in small hospitals and within regions 2, 3, 4, 5, and 8. There are 63 new AD positions projected for 1984. Most of these positions were for small and large hospitals within regions 4 and 5. There are 55 new AD positions projected for 1986. Most of these positions are within hospitals (small & large) and nursing homes (small & large) in regions 4 and 5.

Diploma Nurses

There are currently 88 estimated vacancies for D nurses in the state. The majority of D vacancies exist in small hospitals and large nursing homes in regions 1, 3, 5 and 7. There are 119 new D positions projected for 1984. Most of these positions are for small hospitals and nursing homes within regions 2, 3 and 5. There are 157 new D positions projected for 1986. Most of these positions are for small hospitals and small nursing homes within regions 2, 3, 4, 5, and 6.

Baccalaureate Nurses

There are currently 85 estimated vacancies for BS nurses in the state. The majority of BS vacancies exist in educational programs and hospitals (small and large) within regions 4, 5, 6 and 7. There are 193 new BS positions projected for 1984. Most of these positions are for small and large hospitals within regions 4 and 5. There are 376 new BS positions projected for 1986. Most of these positions are for small and large hospitals in region 4.

Masters Nurses

There are currently 18 estimated vacancies for MS nurses in the state. The majority of MS vacancies exist in educational programs in regions 1, 4, and 5. There are 27 new MS positions projected for 1984. Most of these positions are within large hospitals and educational programs in regions 4, 5, 6 and 7. There are 71 new MS positions projected for 1986. Most of these positions are for large hospitals and educational programs in regions 2, 4, 5, 6 and 7.

Doctoral Nurses

There are currently 7 vacancies estimated for PhD nurses in the state. The majority of PhD vacancies exist in educational programs and large hospitals in regions 1 and 4. There are 4 new PhD positions projected for 1984. Most of these positions are for educational programs in region 7. There are 9 new PhD positions projected for 1986. Most of these positions are for educational programs in region 7.

Future Research Suggestions

1. The nursing manpower demands and resources study should be utilized in conjunction with nursing delineation studies to facilitate adaptive educational curriculum and practicum experiences. The organizational development (OD) objective is increased flow of communication between practice settings and educational programs.

2. The nursing manpower demands and resources study should be utilized in conjunction with nursing delineation studies to facilitate appropriate utilization of nurses in practice settings. Organization policies should be designed to endorse congruency between the preparation of nurses and responsibilities they assume in their practice of nursing. The OD objectives include: 1) Improved job design 2) Improved work effectiveness and 3) Improved quality of working life. The indirect impacts if the above objectives are attained will likely be improved retention of nursing employees (supply).

3. The nursing manpower demand and resources study should be replicated in October, 1986 with appropriate changes.

The current findings are based on estimates provided by nursing supervisors in nine practice settings. Replication of the study will provide a means for assessing the predictive validity of the estimated projections and the nursing manpower supply calculations. Correlations can be used to determine the degree of relationship between projected demands and new nurses utilized for each organization participating in the research process. The OD objective is validation of the research model.

4. Employers and educators of nurses should encourage and engage in research studies regarding effective utilization of nurses commensurate with preparation. The OD objectives might include: 1) job enlargement 2) job enrichment and 3) incentive compensation contingencies.

5. Employers of nurses should encourage and engage in research designed to investigate turnover causes and interventions. The OD objectives include: 1) improved job satisfaction 2) improved work motivation and 3) improved retention of existing nursing resources (supply).

6. The North Dakota Board of Nursing should consider further research on the "part-time nurse" phenomena documented in this study. Is the preference for part-time employment determined by nurses' preference or organizations' preference. The OD objective is matching job design with worker preferences.

7. The North Dakota Board of Nursing should consider research on the feasibility of awarding nursing scholarships with regional-setting contingencies. The OD objective is utilization of incentives to meet specific nursing resource demands.

8. Further research on the causes of high attrition (out-migration) rates for LPN, AD, and D nurses may be appropriate.

REFERENCES

ANA Fact Sheet	American Nurses Association Washington Office Fact Sheet, 1980.
Barchas, K. & Fahs, I.J.	*Nursing in the Upper Midwest, Focus on the State of North Dakota,* Upper Midwest Research and Development Council, 1969.
Berkowitz, N.H.	Comments on the Preceding Article; "Audiences and Their Implications for Evaluation Research." *Journal of Applied Behavioral Science,* 1969, 5 (3), 411-428.
Elnicki, R.	"Turnover" In F. Sloan, *The Geographic Distribution of nurses and Public Policy.* Washington Division of Nursing, United States Public Health Service, 1975.
Ingle, C.,	"*Review and Recommendations on the Articulation of Nursing Education in Minnesota*" Government Document, Minnesota Higher Education Coordinating Board, 1982.
Riley, W.	*Nursing Shortages and Nursing Education.* Unpublished Report to the American Hospital Association, 1981.
Sloan, F.	*Equalizing Access to Nursing Services: the Geographic Dimension;* DHEW Publication No. HRA 78-51, Division of Nursing, 1978.
	North Dakota Board of Nursing Annual Reports, 1979, 1980, 1981, 1982 and 1983.
	North Dakota Occupational Information System, Demand & Supply Characteristics, 1984
	Employment Projections to 1990 by Industry and Occupation, North Dakota Job Service, 1983
	Nursing and Nursing Education: Public Policies and Private Actions, Institute of Medicine, Division of Health Care Services, 1983.
	Guidelines, Educational Mobility in Nursing, American Hospital Association, 1982.

Nurse Supply, Distribution and Requirements, 3rd Report to the Congress, U.S. Department of Health and Human Services, 1982.

Study of Nursing Manpower Requirements and Resources in Kentucky, 1981 and 1985. Council on Higher Education, Frankfort, Kentucky, 1982.

APPENDIX A

NURSING MANPOWER SURVEY

NURSING MANPOWER SURVEY

Please leave this column blank. For computer processing only!

1 2 3 4 (ID) **NURSING MANPOWER SURVEY ID**

5 1. What type of facility do you operate

1. ( ) Hospital with 0-49 beds
2. ( ) Hospital with 50-99 beds
3. ( ) Hospital with 100 or more beds
4. ( ) Nursing Home/ICF with 0-99 beds
5. ( ) Nursing Home/ICF with 100 or more beds
6. ( ) Educational Program
7. ( ) Community Health Agency
8. ( ) Home Health Care Agency
9. ( ) Clinic

6 7 2. In what county is your primary location?

____

3. Please indicate the population of your community or city:

8 9 10 11 12 ______________________________

4. How many individuals do you currently employ with the following educational preparations in nursing?

13 14 15	Licensed Practical Nurses (LPN)	________
16 17 18	Associate Degree Nurses (AD)	________
19 20 21	Diploma Nurses (D)	________
22 23 24	Baccalaureate Nurses (BS, BA, BN)	________
25 26	Master's Nurses (MS,MA)	________
27	Doctoral Nurses (EdD, PhD)	________

5. How many budgeted vacancies do you presently have for nurses who have the following educational backgrounds? Please count individuals, not Full Time Equivalents (F.T.E.'s):

28 29 30 31	LPN	________	BS, BN, BA	________
32 33 34 35	AD	________	MS, MA	________
36 37 38	D	________	EdD, PhD	________

6. Please indicate the number of nurses currently functioning in the following roles within your setting. Indicate the number of individuals, not F.T.E.'s:

39 40 41	General Staff	________
42 43	Clinical Specialists	________
44 45	Nursing Instructors	________
46 47	Nurse Consultants	________
48 49	Nurse Anesthetists	________
50 51	Nurse Supervisors	________
52 53	Nurse Administrators	________
54 55	Nurse practitioners	________
56 57	Research Consultants	________
58 59	Other: ________	________

7. Please help us determine your future needs for nurses with different educational preparations and roles? Please project NEW positions only! Base your projections on individuals, not Full Time Equivalents (F.T.E.'s):

		# Needed Next Year (1984)	#Needed Next Year (thru 1986)
	General Staff		
60 61 62 63	LPN	________	________
64 65 66 67	AD	________	
68 69 70 71	D	________	________
72 73 74 75	BS	________	________
	Clinical Specialists		
76 77 78 79	MS	________	________
1 2 3 4 (ID)			
5 6 7 8	PhD	________	________

		#Needed Next Year (1984)	#Needed Next 3 Years (thru 1986)
	Nursing Instructors		
9 10 11 12	AD		
13 14 15 16	D		
17 18 19 20	BS		
21 22 23 24	MS		
25 26 27 28	PhD		
	Nurse Consultants		
29 30 31 32	BS		
33 34 35 36	MS		
37 38 39 40	PhD		
	Nurse Anesthetists		
41 42 43 44	BS		
45 46 47 48	MS		
	Nurse Supervisors		
49 50 51 52	AD		
53 54 55 56	D		
57 58 59 60	BS		
61 62 63 64	MS		
65 66 67 68	PhD		
	Nurse Administrators		
69 70 71 72	AD		
73 74 75 76	D		
77 78 79 80	BS		
1 2 3 4 (ID)			
5 6 7 8	MS		
9 10 11 12	PhD		
	Nurse Practitioners		
13 14 15 16	AD		
17 18 19 20	D		
21 22 23 24	BS		
25 26 27 28	MS		
29 30 31 32	PhD		
	Research Consultants		
33 34 35 36	BS		
37 38 39 40	MS		
41 42 43 44	PhD		
	Other: ____________________		
45 46	LPN		
47 48	AD		
49 50	D		
51 52	BS		
53 54	MS		
55 56	PhD		

8. Please indicate the percentage of your nursing staff that left your organization (turnover) last year (during 1982) by educational type: Please enter your percentage number in the space provided.

57 58 59 60 LPN ____________________ BS ____________________

61 62 63 64 AD ____________________ MS ____________________

65 66 67 68 D ____________________ PhD ____________________

69 70 71 72 9. Please indicate the total number of nurses you currently employ. Please count individuals, not Full Time Equivalents (F.T.E.) ____________________

73 10. Do you currently pay a salary differential based on educational preparation in nursing?

Yes __________ No __________

74 75 11. What percentage of your nursing staff are full-time employees (40 hours per week)? ____________________

76 77 78 79 12. What is your starting salary for LPN and RN nurses? Please round your figures to the nearest thousand.

LPN ____________________ RN ____________________

80 13. Please indicate if you would like a summary of the research results. Yes__________ No__________

NURSING ROLES

1. **GENERAL STAFF** - Licensed Practical Nurses and Registered Nurses who provide nursing care to patients/clients.
2. **CLINICAL SPECIALIST** - A Registered Nurse with a Masters Degree in nursing who is prepared in a defined specialty area of nursing.
3. **NURSING INSTRUCTOR** - A Registered Nurse who teaches the practice of nursing in an educational program.
4. **NURSE CONSULTANT** - A Registered Nurse who provides professional advice or a specialty service for a fee.
5. **NURSE ANESTHETIST** - A Registered Nurse who is engaged in the practice of anesthesia.
6. **NURSE SUPERVISOR** - A Nurse who is responsible for the management of a unit that provides nursing care.
7. **NURSE ADMINISTRATOR** - A Registered Nurse who is responsible for the management of an agency's nursing services.
8. **NURSE PRACTITIONER** - A Registered Nurse with the advanced specialized nursing education necessary to provide primary health care and/or advanced nursing care.
9. **RESEARCH CONSULTANT** - A Registered Nurse who provides professional advice in the specialty service of research or one who seeks to find scientific answers to perplexing problems.

EDUCATIONAL LEVELS

1. **LICENSED PRACTICAL NURSE (LPN)** - has completed a Practical Nurse program which is one academic to one calendar year in length and is licensed as a Licensed Practical Nurse.
2. **ASSOCIATE DEGREE NURSE (AD)** - has completed a collegiate nursing program for Registered Nurses which is two academic to two calendar years in length and has an Associate Degree with a major in nursing. Licensed as a Registered Nurse.
3. **DIPLOMA NURSE (D)** - has completed a hospital based nursing program for Registered Nurses which is two calendar to three academic years in length and has a diploma from the School of Nursing. Licensed as a Registered Nurse.
4. **BACCALAUREATE DEGREE NURSE (BD)** - has completed a collegiate nursing program for Registered Nurses which is four academic years in length and has a BS Degree with a major in nursing. Licensed as a Registered Nurse.
5. **MS - PHD** - A Registered Nurse who has acquired a Masters Degree in nursing and/or a Doctoral Degree.

APPENDIX B

COVER LETTER FOR NURSING MANPOWER SURVEY

<title> <first name> <last name>
<position>
<organization>
<address>
<city>, <state> <zip>

October 12, 1983

Dear <title> <last name>:

This survey is designed to assist with the projection of nursing manpower demands for the next year (1984) and the next three years (through 1986). A majority of the nursing employers in North Dakota are participating in this study. The survey asks that you make your projections based on educational preparation and nursing roles. Definitions of nursing roles and educational preparation are enclosed for your assistance. This information will assist the North Dakota Board of Nursing with educational planning for nursing manpower supply.

CONFIDENTIALITY

Your responses to this survey are completely confidential. No person(s) will have access to your response sheet other than the research consultants: Dr. Clark and Dr. Smith. Your survey has been number coded to facilitate identification and follow-up procedures.

DIRECTIONS

The numbers on the left hand column are for computer processing only. You are to write your responses in the space provided. Do not leave any questions unanswered. Indicate zero (0) if appropriate for a given response.

RESULTS

The results of the study will be presented in printed documents available from the North Dakota Board of Nursing. If you would like a summary of the research results indicate yes on the last question.

TIMELINES

Please complete the survey as carefully as possible and return it in the envelope provided by October 26, 1983! Thank you for your cooperation.

Sincerely,

Neil Clark, Ed.D.
Research Consultant

APPENDIX C

NURSING MANPOWER DEMAND PROJECTIONS BY ROLE BY EDUCATION BY PRACTICE SETTING

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                     SMALL HOSPITALS 0-49 BEDS

OBS   GROUP                                          SAMPLE   PERCENT   ESTTOT

 1    GENERAL STAFF NEEDS FOR LPN IN 84                20     34.4828     26
 2    GENERAL STAFF NEEDS FOR  AD NURSES IN 84         10     17.2414     13
 3    GENERAL STAFF NEEDS FOR DIPL NURSES IN 84        18     31.0345     23
 4    GENERAL STAFF NEEDS FOR BACC NURSES IN 84        10     17.2414     13

                                                       7
  1   CLINICAL SPEC NEEDS FOR MASTER NURSES IN 84      0        0         0
  2   CLINICAL SPEC NEEDS FOR PHD NURSES IN 84         0        0         0


  1   NURSING INSTR NEEDS FOR AD NURSES IN 84          0        0         0
  2   NURSING INSTR NEEDS FOR DIPL NURSES IN 84        0        0         0
  3   NURSING INSTR NEEDS FOR BACC NURSES IN 84        0        0         0
  4   NURSING INSTR NEEDS FOR MAST NURSES IN 84        0        0         0
  5   NURSING INSTR NEEDS FOR DR NURSES IN 84          0        0         0

  1    CONSULTING NEEDS FOR BACC NURSES IN 84          1       100        1
  2    CONSULTING NEEDS FOR  MASTER NURSES IN 84       0         0        0
  3    CONSULTING NEEDS FOR PHD NURSES IN 84           0         0        0


  1   ANESTHETISTS NEEDS FOR BACC NURSES IN 84         5       100        6
  2   ANESTHETISTS NEEDS FOR MASTER NURSES IN 84       0         0        0


  1    SUPERVISORS NEEDS FOR AD NURSES IN 34           5      29.4118     6
  2    SUPERVISORS NEEDS FOR DIPL NURSES IN 84         6      35.2941     7
  3    SUPERVISORS NEEDS FOR BACC NURSES IN 84         6      35.2941     7
  4    SUPERVISORS NEEDS FOR MASTER NURSES IN 84       0       0.0000     0
  5    SUPERVISORS NEEDS FOR PHD NURSES IN 84          0       0.0000     0

  1   ADMINISTRATOR NEEDS FOR AD NURSES IN 84          1       25         1
  2   ADMINISTRATOR NEEDS FOR DIPL NURSES IN 84        2       50         2
  3   ADMINISTRATOR NEEDS FOR BACC NURSES IN 84        1       25         1
  4   ADMINISTRATOR NEEDS FOR MASTER NURSES IN 84      0        0         0
  5   ADMINISTRATOR NEEDS FOR PHD NURSES IN 84         0        0         0

 1    PRACTITIONER   NEEDS FOR AD NURSES IN 84         0         0        0
 2    PRACTITIONER NEEDS FOR DIPL NURSES IN 84         0         0        0
 3    PRACTITIONER NEEDS FOR BACC NURSES IN 84         0         0        0
 4    PRACTITIONER NEEDS FOR MASTER NURSES IN 84       0         0        0
 5    PRACTITIONER NEEDS FOR PHD NURSES IN 84          0         0        0

  1   RESEARCH CONSULT NEEDS FOR BACC NURSES IN 84       0       0        0
  2   RESEARCH CONSULT NEEDS FOR MAST NURSES IN 84       0       0        0
  3   RESEARCH CONSULT NEEDS FOR PHD NURSES IN 84        0       0        0

          1       OTHER LNP NEEDS IN 84                4       50.0          5
          2       OTHER AD NURSE NEEDS IN 84           1       12.5          1
          3       OTHER DIPL NURSE NEEDS IN 84         1       12.5          1
          4       OTHER BACC NURSE NEEDS IN 84         2       25.0          2
          5       OTHER MASTER NURSE NEEDS IN 84       0        0.0          0
          6       OTHER PHD NURSE NEEDS IN 84          0        0.0          0
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                         SMALL HOSPITALS 0-49 BEDS

OBS   GROUP                                             SAMPLE    PERCENT    ESTTOT

 1    GENERAL STAFF LPN NEEDS THRU 86                     24      38.7097      31
 2    GENERAL STAFF AD NURSE NEEDS THRU 86                 3       4.8387       3
 3    GENERAL STAFF DIPL NURSE NEEDS THRU 86              20      32.2581      26
 4    GENERAL STAFF BACC NURSE NEEDS THRU 86              15      24.1935      19

  1    CLINICAL NEEDS FOR MASTER NURSES THRU 86        0          0          0
  2    CLINICAL NEEDS FOR PHD NURSES THRU 86           0          0          0

 1   INSTRUCTOR NEEDS FOR AD NURSES THRU 86             0          0          0
 2   INSTRUCTOR NEEDS FOR DIPL NURSES THRU 86           0          0          0
 3   INSTRUCTOR NEEDS FOR BACC NURSES THRU 86           0          0          0
 4   INSTRUCTOR NEEDS FOR MASTER NURSES THRU 86         0          0          0
 5   INSTRUCTOR NEEDS FOR PHD NURSES THRU 86            0          0          0

 1   CONSULTANT NEEDS FOR BACC NURSES THRU 86           2         100         2
 2   CONSULTANT NEEDS FOR MASTER NURSES THRU 86         0           0         0
 3   CONSULTANT NEEDS FOR PHD NURSES THRU 86            0           0         0

  1   ANESTHETISTS NEEDS FOR BACC NURSES THRU 86        5     33.3333     6
  2   ANESTHETISTS NEEDS FOR MASTER NURSES THRU 86      1     16.6667     1

  1    SUPERVISOR NEEDS FOR AD NURSES THRU 86           5      27.7778      6
  2    SUPERVISOR NEEDS FOR DIPL NURSES THRU 86         6      33.3333      7
  3    SUPERVISOR NEEDS FOR BACC NURSES THRU 86         7      38.8889      9
  4    SUPERVISOR NEEDS FOR MASTER NURSES THRU 86       0       0.0000      0
  5    SUPERVISOR NEEDS FOR PHD NURSES THRU 86          0       0.0000      0

  1   ADMINISTRATOR NEEDS FOR AD NURSES THRU 86           2       25        2
  2   ADMINISTRATOR NEEDS FOR DIPL NURSES THRU 86         2       25        2
  3   ADMINISTRATOR NEEDS FOR BACC NURSES THRU 86         4       50        5
  4   ADMINISTRATOR NEEDS FOR MASTER NURSES THRU 86       0        0        0
  5   ADMINISTRATOR NEEDS FOR PHD NURSES THRU 86          0        0        0
   1    PRACTITIONER NEEDS FOR AD NURSES THRU 86            0       0       0
   2    PRACTITIONER NEEDS FOR DIPL NURSES THRU 86          0       0       0
   3    PRACTITIONER NEEDS FOR BACC NURSES THRU 86          2     100       2
   4    PRACTITIONER NEEDS FOR MASTER NURSES THRU 86        0       0       0
   5    PRACTITIONER NEEDS FOR PHD NURSES THRU 86           0       0       0

  1     RESEARCH CONSULT NEEDS FOR BACC NURSES THRU 86     0     0     0
  2     RESEARCH CONSULT NEEDS FOR MS NURSES THRU 86       0     0     0
  3     RESEARCH CONSULT NEEDS FOR PHD NURSES THRU 86      0     0     0
   1       OTHER LPN NEEDS THRU 86                4        44.4444       5
   2       OTHER AD NURSE NEEDS THRU 86           1        11.1111       1
   3       OTHER DIPL NURSE NEEDS THRU 86         1        11.1111       1
   4       OTHER BACC NURSE NEEDS THRU 86         3        33.3333       3
   5       OTHER MASTER NURSE NEEDS THRU 86       0         0.0000       0
   5       OTHER PHD NURSE NEEDS THRU 86          0         0.0000       0
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                          MEDIUM HOSPITALS 50-99 BEDS

OBS  GROUP                                              SAMPLE   PERCENT   ESTTOT

 1   GENERAL STAFF NEEDS FOR LPN IN 84                    7      41.1765     7
 2   GENERAL STAFF NEEDS FOR  AD NURSES IN 84             0       0.0000     0
 3   GENERAL STAFF NEEDS FOR DIPL NURSES IN 84            4      23.5294     4
 4   GENERAL STAFF NEEDS FOR BACC NURSES IN 84            6      35.2941     6

 1  CLINICAL SPEC NEEDS FOR MASTER NURSES IN 84           2       100       2
 2  CLINICAL SPEC NEEDS FOR PHD NURSES IN 84              0         0       0

 1    NURSING INSTR NEEDS FOR AD NURSES IN 84             0         0          0
 2    NURSING INSTR NEEDS FOR DIPL NURSES IN 84           0         0          0
 3    NURSING INSTR NEEDS FOR BACC NURSES IN 84           0         0          0
 4    NURSING INSTR NEEDS FOR MAST NURSES IN 84           0         0          0
 5    NURSING INSTR NEEDS FOR DR NURSES IN 84             0         0          0

 1    CONSULTING NEEDS FOR BACC NURSES IN 84              0         0          0
 2    CONSULTING NEEDS FOR  MASTER NURSES IN 84           0         0          0
 3    CONSULTING NEEDS FOR PHD NURSES IN 84               0         0          0

1   ANESTHETISTS NEEDS FOR BACC NURSES IN 84              0         0          0
2   ANESTHETISTS NEEDS FOR MASTER NURSES IN 84            0         0          0

 1    SUPERVISORS NEEDS FOR AD NURSES IN 84               0         0          0
 2    SUPERVISORS NEEDS FOR DIPL NURSES IN 84             0         0          0
 3    SUPERVISORS NEEDS FOR BACC NURSES IN 84             0         0          0
 4    SUPERVISORS NEEDS FOR MASTER NURSES IN 84           0         0          0
 5    SUPERVISORS NEEDS FOR PHD NURSES IN 84              0         0          0

 1  ADMINISTRATOR NEEDS FOR AD NURSES IN 84                0         0      0
 2  ADMINISTRATOR NEEDS FOR DIPL NURSES IN 84              0         0      0
 3  ADMINISTRATOR NEEDS FOR BACC NURSES IN 84              2       100      2
 4  ADMINISTRATOR NEEDS FOR MASTER NURSES IN 84            0         0      0
 5  ADMINISTRATOR NEEDS FOR PHD NURSES IN 84               0         0      0

 1   PRACTITIONER   NEEDS FOR AD NURSES IN 84              0         0          0
 2   PRACTITIONER NEEDS FOR DIPL NURSES IN 84              0         0          0
 3   PRACTITIONER NEEDS FOR BACC NURSES IN 84              0         0          0
 4   PRACTITIONER NEEDS FOR MASTER NURSES IN 84            0         0          0
 5   PRACTITIONER NEEDS FOR PHD NURSES IN 84               0         0          0

 1  RESEARCH CONSULT NEEDS FOR BACC NURSES IN 84           0         0      0
 2  RESEARCH CONSULT NEEDS FOR MAST NURSES IN 84           0         0      0
 3  RESEARCH CONSULT NEEDS FOR PHD NURSES IN 84            0         0      0

       1      OTHER LNP NEEDS IN 84                     0          0           0
       2      OTHER AD NURSE NEEDS IN 84                0          0           0
       3      OTHER DIPL NURSE NEEDS IN 84              0          0           0
       4      OTHER BACC NURSE NEEDS IN 84              0          0           0
       5      OTHER MASTER NURSE NEEDS IN 84            0          0           0
       6      OTHER PHD NURSE NEEDS IN 84               0          0           0
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                        MEDIUM HOSPITALS 50-99 BEDS

OBS   GROUP                                            SAMPLE    PERCENT    ESTTOT

 1    GENERAL STAFF LPN NEEDS THRU 86                     7      25.9259       7
 2    GENERAL STAFF AD NURSE NEEDS THRU 86                0       0.0000       0
 3    GENERAL STAFF DIPL NURSE NEEDS THRU 86              4      14.8148       4
 4    GENERAL STAFF BACC NURSE NEEDS THRU 86             16      59.2593      16

 1    CLINICAL NEEDS FOR MASTER NURSES THRU 86            0          0         0
 2    CLINICAL NEEDS FOR PHD NURSES THRU 86               0          0         0

 1    INSTRUCTOR NEEDS FOR AD NURSES THRU 86              0          0         0
 2    INSTRUCTOR NEEDS FOR DIPL NURSES THRU 86            0          0         0
 3    INSTRUCTOR NEEDS FOR BACC NURSES THRU 86            0          0         0
 4    INSTRUCTOR NEEDS FOR MASTER NURSES THRU 86          0          0         0
 5    INSTRUCTOR NEEDS FOR PHD NURSES THRU 86             0          0         0

 1    CONSULTANT NEEDS FOR BACC NURSES THRU 86            0          0         0
 2    CONSULTANT NEEDS FOR MASTER NURSES THRU 86          0          0         0
 3    CONSULTANT NEEDS FOR PHD NURSES THRU 86             0          0         0

 1    ANESTHETISTS NEEDS FOR BACC NURSES THRU 86          0          0         0
 2    ANESTHETISTS NEEDS FOR MASTER NURSES THRU 86        0          0         0

 1    SUPERVISOR NEEDS FOR AD NURSES THRU 86              0          0         0
 2    SUPERVISOR NEEDS FOR DIPL NURSES THRU 86            0          0         0
 3    SUPERVISOR NEEDS FOR BACC NURSES THRU 86            1        100         1
 4    SUPERVISOR NEEDS FOR MASTER NURSES THRU 86          0          0         0
 5    SUPERVISOR NEEDS FOR PHD NURSES THRU 86             0          0         0

 1    ADMINISTRATOR NEEDS FOR AD NURSES THRU 86           0          0         0
 2    ADMINISTRATOR NEEDS FOR DIPL NURSES THRU 86         0          0         0
 3    ADMINISTRATOR NEEDS FOR BACC NURSES THRU 86         2        100         2
 4    ADMINISTRATOR NEEDS FOR MASTER NURSES THRU 86       0          0         0
 5    ADMINISTRATOR NEEDS FOR PHD NURSES THRU 86          0          0         0

 1    PRACTITIONER NEEDS FOR AD NURSES THRU 86            0          0         0
 2    PRACTITIONER NEEDS FOR DIPL NURSES THRU 86          0          0         0
 3    PRACTITIONER NEEDS FOR BACC NURSES THRU 86          0          0         0
 4    PRACTITIONER NEEDS FOR MASTER NURSES THRU 86        0          0         0
 5    PRACTITIONER NEEDS FOR PHD NURSES THRU 86           0          0         0

 1    RESEARCH CONSULT NEEDS FOR BACC NURSES THRU 86      0          0         0
 2    RESEARCH CONSULT NEEDS FOR MS NURSES THRU 86        0          0         0
 3    RESEARCH CONSULT NEEDS FOR PHD NURSES THRU 86       0          0         0

 1    OTHER LPN NEEDS THRU 86                             0          0         0
 2    OTHER AD NURSE NEEDS THRU 86                        0          0         0
 3    OTHER DIPL NURSE NEEDS THRU 86                      0          0         0
 4    OTHER BACC NURSE NEEDS THRU 86                      0          0         0
 5    OTHER MASTER NURSE NEEDS THRU 86                    0          0         0
 6    OTHER PHD NURSE NEEDS THRU 86                       0          0         0
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                         LARGE HOSPITALS OVER 100 BEDS

OBS   GROUP                                            SAMPLE   PERCENT   ESTTOT

 1    GENERAL STAFF NEEDS FOR LPN IN 84                  26     20.3125     26
 2    GENERAL STAFF NEEDS FOR  AD NURSES IN 84           21     16.4063     21
 3    GENERAL STAFF NEEDS FOR DIPL NURSES IN 84           6      4.6875      6
 4    GENERAL STAFF NEEDS FOR BACC NURSES IN 84          75     58.5938     75

  1   CLINICAL SPEC NEEDS FOR MASTER NURSES IN 84         7     100          7
  2   CLINICAL SPEC NEEDS FOR PHD NURSES IN 84            0       0          0


 1     NURSING INSTR NEEDS FOR AD NURSES IN 84           0         0          0
 2     NURSING INSTR NEEDS FOR DIPL NURSES IN 84         0         0          0
 3     NURSING INSTR NEEDS FOR BACC NURSES IN 84         2        50          2
 4     NURSING INSTR NEEDS FOR MAST NURSES IN 84         2        50          2
 5     NURSING INSTR NEEDS FOR DR NURSES IN 84           0         0          0


  1     CONSULTING NEEDS FOR BACC NURSES IN 84           0          0          0
  2     CONSULTING NEEDS FOR  MASTER NURSES IN 84        4        100          4
  3     CONSULTING NEEDS FOR PHD NURSES IN 34            0          0          0


  1     ANESTHETISTS NEEDS FOR BACC NURSES IN 84          9        100          9
  2     ANESTHETISTS NEEDS FOR MASTER NURSES IN 84        0          0          0


  1      SUPERVISORS NEEDS FOR AD NURSES IN 84          0        0.0000       0
  2      SUPERVISORS NEEDS FOR DIPL NURSES IN 84        0        0.0000       0
  3      SUPERVISORS NEEDS FOR BACC NURSES IN 84        9       81.8182       9
  4      SUPERVISORS NEEDS FOR MASTER NURSES IN 84      2       18.1818       2
  5      SUPERVISORS NEEDS FOR PHD NURSES IN 84         0        0.0000       0
   1     ADMINISTRATOR NEEDS FOR AD NURSES IN 84          0         0          0
   2     ADMINISTRATOR NEEDS FOR DIPL NURSES IN 84        0         0          0
   3     ADMINISTRATOR NEEDS FOR BACC NURSES IN 84        0         0          0
   4     ADMINISTRATOR NEEDS FOR MASTER NURSES IN 84      0         0          0
   5     ADMINISTRATOR NEEDS FOR PHD NURSES IN 84         0         0          0
   1     PRACTITIONER   NEEDS FOR AD NURSES IN 84          0          0          0
   2     PRACTITIONER NEEDS FOR DIPL NURSES IN 84          0          0          0
   3     PRACTITIONER NEEDS FOR BACC NURSES IN 84          0          0          0
   4     PRACTITIONER NEEDS FOR MASTER NURSES IN 84        0          0          0
   5     PRACTITIONER NEEDS FOR PHD NURSES IN 84           0          0          0

   1    RESEARCH CONSULT NEEDS FOR BACC NURSES IN 84     0          0          0
   2    RESEARCH CONSULT NEEDS FOR MAST NURSES IN 84     0          0          0
   3    RESEARCH CONSULT NEEDS FOR PHD NURSES IN 84      0          0          0


      1          OTHER LNP NEEDS IN 84               1            50           1
      2          OTHER AD NURSE NEEDS IN 84          1            50           1
      3          OTHER DIPL NURSE NEEDS IN 84        0             0           0
      4          OTHER BACC NURSE NEEDS IN 84        0             0           0
      5          OTHER MASTER NURSE NEEDS IN 84      0             0           0
      6          OTHER PHD NURSE NEEDS IN 84         0             0           0
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                    LARGE HOSPITALS OVER 100 BEDS

OBS   GROUP                                        SAMPLE   PERCENT    ESTTOT

 1    GENERAL STAFF LPN NEEDS THRU 86                42     15.6716      42
 2    GENERAL STAFF AD NURSE NEEDS THRU 86           15      5.5970      15
 3    GENERAL STAFF DIPL NURSE NEEDS THRU 86         27     10.0746      27
 4    GENERAL STAFF BACC NURSE NEEDS THRU 86        184     68.6567     184

  1    CLINICAL NEEDS FOR MASTER NURSES THRU 86       14    93.3333      14
  2    CLINICAL NEEDS FOR PHD NURSES THRU 86           1     6.6667       1


 1    INSTRUCTOR NEEDS FOR AD NURSES THRU 86          0      0.0000      0
 2    INSTRUCTOR NEEDS FOR DIPL NURSES THRU 86        0      0.0000      0
 3    INSTRUCTOR NEEDS FOR BACC NURSES THRU 86        2     33.3333      2
 4    INSTRUCTOR NEEDS FOR MASTER NURSES THRU 86      4     66.6667      4
 5    INSTRUCTOR NEEDS FOR PHD NURSES THRU 86         0      0.0000      0

 1    CONSULTANT NEEDS FOR BACC NURSES THRU 86        0         0        0
 2    CONSULTANT NEEDS FOR MASTER NURSES THRU 86      9       100        9
 3    CONSULTANT NEEDS FOR PHD NURSES THRU 86         0         0        0


 1   ANESTHETISTS NEEDS FOR BACC NURSES THRU 86      11     84.6154    11
 2   ANESTHETISTS NEEDS FOR MASTER NURSES THRU 86     2     15.3846     2

 1    SUPERVISOR NEEDS FOR AD NURSES THRU 86          0      0.0000      0
 2    SUPERVISOR NEEDS FOR DIPL NURSES THRU 86        0      0.0000      0
 3    SUPERVISOR NEEDS FOR BACC NURSES THRU 86       15     78.9474     15
 4    SUPERVISOR NEEDS FOR MASTER NURSES THRU 86      4     21.0526      4
 5    SUPERVISOR NEEDS FOR PHD NURSES THRU 86         0      0.0000      0

 1   ADMINISTRATOR NEEDS FOR AD NURSES THRU 86        0         0        0
 2   ADMINISTRATOR NEEDS FOR DIPL NURSES THRU 86      0         0        0
 3   ADMINISTRATOR NEEDS FOR BACC NURSES THRU 86      1        25        1
 4   ADMINISTRATOR NEEDS FOR MASTER NURSES THRU 86    3        75        3
 5   ADMINISTRATOR NEEDS FOR PHD NURSES THRU 86       0         0        0

 1    PRACTITIONER NEEDS FOR AD NURSES THRU 86        0         0        0
 2    PRACTITIONER NEEDS FOR DIPL NURSES THRU 86      0         0        0
 3    PRACTITIONER NEEDS FOR BACC NURSES THRU 86      0         0        0
 4    PRACTITIONER NEEDS FOR MASTER NURSES THRU 86    0         0        0
 5    PRACTITIONER NEEDS FOR PHD NURSES THRU 86       0         0        0

1     RESEARCH CONSULT NEEDS FOR BACC NURSES THRU 86     0       0      0
2     RESEARCH CONSULT NEEDS FOR MS NURSES THRU 86       4     100      4
3     RESEARCH CONSULT NEEDS FOR PHD NURSES THRU 86      0       0      0

 1       OTHER LPN NEEDS THRU 86                    2      16.6667      2
 2       OTHER AD NURSE NEEDS THRU 86               2      16.6667      2
 3       OTHER DIPL NURSE NEEDS THRU 86             0       0.0000      0
 4       OTHER BACC NURSE NEEDS THRU 86             6      50.0000      6
 5       OTHER MASTER NURSE NEEDS THRU 86           2      16.6667      2
 6       OTHER PHD NURSE NEEDS THRU 86              0       0.0000      0
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                         SMALL NURSING HOMES 0-99 BEDS

OBS  GROUP                                              SAMPLE  PERCENT  ESTTOT

 1   GENERAL STAFF NEEDS FOR LPN IN 84                    20    48.7805    25
 2   GENERAL STAFF NEEDS FOR  AD NURSES IN 84              4     9.7561     5
 3   GENERAL STAFF NEEDS FOR DIPL NURSES IN 84            13    31.7073    16
 4   GENERAL STAFF NEEDS FOR BACC NURSES IN 84             4     9.7561     5

 1   CLINICAL SPEC NEEDS FOR MASTER NURSES IN 84           0     0         0
 2   CLINICAL SPEC NEEDS FOR PHD NURSES IN 84              0     0         0


 1   NURSING INSTR NEEDS FOR AD NURSES IN 84               0     0         0
 2   NURSING INSTR NEEDS FOR DIPL NURSES IN 84             3    75         3
 3   NURSING INSTR NEEDS FOR BACC NURSES IN 84             1    25         1
 4   NURSING INSTR NEEDS FOR MAST NURSES IN 84             0     0         0
 5   NURSING INSTR NEEDS FOR DR NURSES IN 84               0     0         0

 1   CONSULTING NEEDS FOR BACC NURSES IN 84                1   100         1
 2   CONSULTING NEEDS FOR  MASTER NURSES IN 84             0     0         0
 3   CONSULTING NEEDS FOR PHD NURSES IN 84                 0     0         0


 1   ANESTHETISTS NEEDS FOR BACC NURSES IN 84              0     0         0
 2   ANESTHETISTS NEEDS FOR MASTER NURSES IN 84            0     0         0

 1   SUPERVISORS NEEDS FOR AD NURSES IN 84                 1     5.8824     1
 2   SUPERVISORS NEEDS FOR DIPL NURSES IN 84              13    76.4706    16
 3   SUPERVISORS NEEDS FOR BACC NURSES IN 84               3    17.6471     3
 4   SUPERVISORS NEEDS FOR MASTER NURSES IN 84             0     0.0000     0
 5   SUPERVISORS NEEDS FOR PHD NURSES IN 84                0     0.0000     0

 1   ADMINISTRATOR NEEDS FOR AD NURSES IN 84               0     0.0000   0
 2   ADMINISTRATOR NEEDS FOR DIPL NURSES IN 84             2    66.6667   2
 3   ADMINISTRATOR NEEDS FOR BACC NURSES IN 84             1    33.3333   1
 4   ADMINISTRATOR NEEDS FOR MASTER NURSES IN 84           0     0.0000   0
 5   ADMINISTRATOR NEEDS FOR PHD NURSES IN 84              0     0.0000   0

 1   PRACTITIONER   NEEDS FOR AD NURSES IN 84              0     0         0
 2   PRACTITIONER NEEDS FOR DIPL NURSES IN 84              1   100         1
 3   PRACTITIONER NEEDS FOR BACC NURSES IN 84              0     0         0
 4   PRACTITIONER NEEDS FOR MASTER NURSES IN 84            0     0         0
 5   PRACTITIONER NEEDS FOR PHD NURSES IN 84               0     0         0

 1   RESEARCH CONSULT NEEDS FOR BACC NURSES IN 84          0     0         0
 2   RESEARCH CONSULT NEEDS FOR MAST NURSES IN 84          0     0         0
 3   RESEARCH CONSULT NEEDS FOR PHD NURSES IN 84           0     0         0

 1        OTHER LNP NEEDS IN 84                            9    81.8182    11
 2        OTHER AD NURSE NEEDS IN 84                       0     0.0000     0
 3        OTHER DIPL NURSE NEEDS IN 84                     2    18.1818     2
 4        OTHER BACC NURSE NEEDS IN 84                     0     0.0000     0
 5        OTHER MASTER NURSE NEEDS IN 84                   0     0.0000     0
 6        OTHER PHD NURSE NEEDS IN 84                      0     0.0000     0
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SMALL NURSING HOMES 0-99 BEDS

OBS	GROUP	SAMPLE	PERCENT	ESTTOT
1	GENERAL STAFF LPN NEEDS THRU 86	20	36.3636	25
2	GENERAL STAFF AD NURSE NEEDS THRU 86	3	5.4545	3
3	GENERAL STAFF DIPL NURSE NEEDS THRU 86	23	41.8182	29
4	GENERAL STAFF BACC NURSE NEEDS THRU 86	9	16.3636	11
1	CLINICAL NEEDS FOR MASTER NURSES THRU 86	0	0	0
2	CLINICAL NEEDS FOR PHD NURSES THRU 86	0	0	0
1	INSTRUCTOR NEEDS FOR AD NURSES THRU 86	1	20	1
2	INSTRUCTOR NEEDS FOR DIPL NURSES THRU 86	3	60	3
3	INSTRUCTOR NEEDS FOR BACC NURSES THRU 86	1	20	1
4	INSTRUCTOR NEEDS FOR MASTER NURSES THRU 86	0	0	0
5	INSTRUCTOR NEEDS FOR PHD NURSES THRU 86	0	0	0
1	CONSULTANT NEEDS FOR BACC NURSES THRU 86	0	0	0
2	CONSULTANT NEEDS FOR MASTER NURSES THRU 86	0	0	0
3	CONSULTANT NEEDS FOR PHD NURSES THRU 86	0	0	0
1	ANESTHETISTS NEEDS FOR BACC NURSES THRU 86	0	0	0
2	ANESTHETISTS NEEDS FOR MASTER NURSES THRU 86	0	0	0
1	SUPERVISOR NEEDS FOR AD NURSES THRU 86	2	11.1111	2
2	SUPERVISOR NEEDS FOR DIPL NURSES THRU 86	13	72.2222	16
3	SUPERVISOR NEEDS FOR BACC NURSES THRU 86	3	16.6667	3
4	SUPERVISOR NEEDS FOR MASTER NURSES THRU 86	0	0.0000	0
5	SUPERVISOR NEEDS FOR PHD NURSES THRU 86	0	0.0000	0
1	ADMINISTRATOR NEEDS FOR AD NURSES THRU 86	1	25	1
2	ADMINISTRATOR NEEDS FOR DIPL NURSES THRU 86	1	25	1
3	ADMINISTRATOR NEEDS FOR BACC NURSES THRU 86	2	50	2
4	ADMINISTRATOR NEEDS FOR MASTER NURSES THRU 86	0	0	0
5	ADMINISTRATOR NEEDS FOR PHD NURSES THRU 86	0	0	0
1	PRACTITIONER NEEDS FOR AD NURSES THRU 86	0	0	0
2	PRACTITIONER NEEDS FOR DIPL NURSES THRU 86	0	0	0
3	PRACTITIONER NEEDS FOR BACC NURSES THRU 86	1	100	1
4	PRACTITIONER NEEDS FOR MASTER NURSES THRU 86	0	0	0
5	PRACTITIONER NEEDS FOR PHD NURSES THRU 86	0	0	0
1	RESEARCH CONSULT NEEDS FOR BACC NURSES THRU 86	0	0	0
2	RESEARCH CONSULT NEEDS FOR MS NURSES THRU 86	0	0	0
3	RESEARCH CONSULT NEEDS FOR PHD NURSES THRU 86	0	0	0
1	OTHER LPN NEEDS THRU 86	13	56.5217	16
2	OTHER AD NURSE NEEDS THRU 86	3	13.0435	3
3	OTHER DIPL NURSE NEEDS THRU 86	5	21.7391	6
4	OTHER BACC NURSE NEEDS THRU 86	2	8.6957	2
5	OTHER MASTER NURSE NEEDS THRU 86	0	0.0000	0
6	OTHER PHD NURSE NEEDS THRU 86	0	0.0000	0

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                        LARGE NURSING HOMES OVER 100 BEDS

OBS   GROUP                                               SAMPLE   PERCENT   ESTTOT

 1    GENERAL STAFF NEEDS FOR LPN IN 84                     12     38.7097     17
 2    GENERAL STAFF NEEDS FOR  AD NURSES IN 84               5     16.1290      7
 3    GENERAL STAFF NEEDS FOR DIPL NURSES IN 84             11     35.4839     15
 4    GENERAL STAFF NEEDS FOR BACC NURSES IN 84              3      9.6774      4

  1   CLINICAL SPEC NEEDS FOR MASTER NURSES IN 84        0          0          0
  2   CLINICAL SPEC NEEDS FOR PHD NURSES IN 84           0          0          0

 1    NURSING INSTR NEEDS FOR AD NURSES IN 84          1          100          1
 2    NURSING INSTR NEEDS FOR DIPL NURSES IN 84        0            0          0
 3    NURSING INSTR NEEDS FOR BACC NURSES IN 84        0            0          0
 4    NURSING INSTR NEEDS FOR MAST NURSES IN 84        0            0          0
 5    NURSING INSTR NEEDS FOR DR NURSES IN 84          0            0          0

  1    CONSULTING NEEDS FOR BACC NURSES IN 84            0          0           0
  2    CONSULTING NEEDS FOR  MASTER NURSES IN 84         0          0           0
  3    CONSULTING NEEDS FOR PHD NURSES IN 84             0          0           0

   1    ANESTHETISTS NEEDS FOR BACC NURSES IN 84           0          0          0
   2    ANESTHETISTS NEEDS FOR MASTER NURSES IN 84         0          0          0

    1    SUPERVISORS NEEDS FOR AD NURSES IN 84           2         40          2
    2    SUPERVISORS NEEDS FOR DIPL NURSES IN 84         2         40          2
    3    SUPERVISORS NEEDS FOR BACC NURSES IN 84         1         20          1
    4    SUPERVISORS NEEDS FOR MASTER NURSES IN 84       0          0          0
    5    SUPERVISORS NEEDS FOR PHD NURSES IN 84          0          0          0

    1   ADMINISTRATOR NEEDS FOR AD NURSES IN 84          0          0          0
    2   ADMINISTRATOR NEEDS FOR DIPL NURSES IN 84        1        100          1
    3   ADMINISTRATOR NEEDS FOR BACC NURSES IN 84        0          0          0
    4   ADMINISTRATOR NEEDS FOR MASTER NURSES IN 84      0          0          0
    5   ADMINISTRATOR NEEDS FOR PHD NURSES IN 84         0          0          0

   1   PRACTITIONER   NEEDS FOR AD NURSES IN 84          1        100          1
   2   PRACTITIONER NEEDS FOR DIPL NURSES IN 84          0          0          0
   3   PRACTITIONER NEEDS FOR BACC NURSES IN 84          0          0          0
   4   PRACTITIONER NEEDS FOR MASTER NURSES IN 84        0          0          0
   5   PRACTITIONER NEEDS FOR PHD NURSES IN 84           0          0          0

   1  RESEARCH CONSULT NEEDS FOR BACC NURSES IN 84     0          0          0
   2  RESEARCH CONSULT NEEDS FOR MAST NURSES IN 84     0          0          0
   3  RESEARCH CONSULT NEEDS FOR PHD NURSES IN 84      0          0          0

             1       OTHER LNP NEEDS IN 84               1          100          1
             2       OTHER AD NURSE NEEDS IN 84          0            0          0
             3       OTHER DIPL NURSE NEEDS IN 84        0            0          0
             4       OTHER BACC NURSE NEEDS IN 84        0            0          0
             5       OTHER MASTER NURSE NEEDS IN 84      0            0          0
             6       OTHER PHD NURSE NEEDS IN 84         0            0          0
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                    LARGE NURSING HOMES OVER 100 BEDS

OBS    GROUP                                              SAMPLE    PERCENT    ESTTOT

 1     GENERAL STAFF LPN NEEDS THRU 86                      13      37.1429       18
 2     GENERAL STAFF AD NURSE NEEDS THRU 86                  6      17.1429        8
 3     GENERAL STAFF DIPL NURSE NEEDS THRU 86                9      25.7143       12
 4     GENERAL STAFF BACC NURSE NEEDS THRU 86                7      20.0000        9


  1    CLINICAL NEEDS FOR MASTER NURSES THRU 86             0          0           0
  2    CLINICAL NEEDS FOR PHD NURSES THRU 86                0          0           0


 1    INSTRUCTOR NEEDS FOR AD NURSES THRU 86                 1        100          1
 2    INSTRUCTOR NEEDS FOR DIPL NURSES THRU 86               0          0          0
 3    INSTRUCTOR NEEDS FOR BACC NURSES THRU 86               0          0          0
 4    INSTRUCTOR NEEDS FOR MASTER NURSES THRU 86             0          0          0
 5    INSTRUCTOR NEEDS FOR PHD NURSES THRU 86                0          0          0

 1    CONSULTANT NEEDS FOR BACC NURSES THRU 86               0          0          0
 2    CONSULTANT NEEDS FOR MASTER NURSES THRU 86             0          0          0
 3    CONSULTANT NEEDS FOR PHD NURSES THRU 86                0          0          0


  1   ANESTHETISTS NEEDS FOR BACC NURSES THRU 86             0          0          0
  2   ANESTHETISTS NEEDS FOR MASTER NURSES THRU 86           0          0          0


  1    SUPERVISOR NEEDS FOR AD NURSES THRU 86                3       37.5          4
  2    SUPERVISOR NEEDS FOR DIPL NURSES THRU 86              2       25.0          2
  3    SUPERVISOR NEEDS FOR BACC NURSES THRU 86              3       37.5          4
  4    SUPERVISOR NEEDS FOR MASTER NURSES THRU 86            0        0.0          0
  5  . SUPERVISOR NEEDS FOR PHD NURSES THRU 86               0        0.0          0

 1   ADMINISTRATOR NEEDS FOR AD NURSES THRU 86               0          0          0
 2   ADMINISTRATOR NEEDS FOR DIPL NURSES THRU 86             1         20          1
 3   ADMINISTRATOR NEEDS FOR BACC NURSES THRU 86             4         80          5
 4   ADMINISTRATOR NEEDS FOR MASTER NURSES THRU 86           0          0          0
 5   ADMINISTRATOR NEEDS FOR PHD NURSES THRU 86              0          0          0

  1   PRACTITIONER NEEDS FOR AD NURSES THRU 86               1         50          1
  2   PRACTITIONER NEEDS FOR DIPL NURSES THRU 86             0          0          0
  3   PRACTITIONER NEEDS FOR BACC NURSES THRU 86             1         50          1
  4   PRACTITIONER NEEDS FOR MASTER NURSES THRU 86           0          0          0
  5   PRACTITIONER NEEDS FOR PHD NURSES THRU 86              0          0          0

1      RESEARCH CONSULT NEEDS FOR BACC NURSES THRU 86     0      0      0
2      RESEARCH CONSULT NEEDS FOR MS NURSES THRU 86       0      0      0
3      RESEARCH CONSULT NEEDS FOR PHD NURSES THRU 86      0      0      0

        1       OTHER LPN NEEDS THRU 86                     0            0            0
        2       OTHER AD NURSE NEEDS THRU 86                0            0            0
        3       OTHER DIPL NURSE NEEDS THRU 86              0            0            0
        4       OTHER BACC NURSE NEEDS THRU 86              0            0            0
        5       OTHER MASTER NURSE NEEDS THRU 86            0            0            0
        6       OTHER PHD NURSE NEEDS THRU 86               0            0            0
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                              EDUCATION PROGRAMS

OBS  GROUP                                                 SAMPLE  PERCENT   ESTTOT

 1   GENERAL STAFF NEEDS FOR LPN IN 84                       0         0         0
 2   GENERAL STAFF NEEDS FOR  AD NURSES IN 84                0         0         0
 3   GENERAL STAFF NEEDS FOR DIPL NURSES IN 84               0         0         0
 4   GENERAL STAFF NEEDS FOR BACC NURSES IN 84               1       100         1

 1   CLINICAL SPEC NEEDS FOR MASTER NURSES IN 84             1       100         1
 2   CLINICAL SPEC NEEDS FOR PHD NURSES IN 84                0         0         0

 1   NURSING INSTR NEEDS FOR AD NURSES IN 84                 0    0.0000         0
 2   NURSING INSTR NEEDS FOR DIPL NURSES IN 84               3   13.6364         3
 3   NURSING INSTR NEEDS FOR BACC NURSES IN 84              12   54.5455        12
 4   NURSING INSTR NEEDS FOR MAST NURSES IN 84               6   27.2727         6
 5   NURSING INSTR NEEDS FOR DR NURSES IN 84                 1    4.5455         1

 1   CONSULTING NEEDS FOR BACC NURSES IN 84                  0         0         0
 2   CONSULTING NEEDS FOR  MASTER NURSES IN 84               0         0         0
 3   CONSULTING NEEDS FOR PHD NURSES IN 84                   0         0         0

 1   ANESTHETISTS NEEDS FOR BACC NURSES IN 84                0         0         0
 2   ANESTHETISTS NEEDS FOR MASTER NURSES IN 84              0         0         0

 1   SUPERVISORS NEEDS FOR AD NURSES IN 84                   0         0         0
 2   SUPERVISORS NEEDS FOR DIPL NURSES IN 84                 0         0         0
 3   SUPERVISORS NEEDS FOR BACC NURSES IN 84                 0         0         0
 4   SUPERVISORS NEEDS FOR MASTER NURSES IN 84               0         0         0
 5   SUPERVISORS NEEDS FOR PHD NURSES IN 84                  0         0         0

 1   ADMINISTRATOR NEEDS FOR AD NURSES IN 84                 0         0         0
 2   ADMINISTRATOR NEEDS FOR DIPL NURSES IN 84               0         0         0
 3   ADMINISTRATOR NEEDS FOR BACC NURSES IN 84               0         0         0
 4   ADMINISTRATOR NEEDS FOR MASTER NURSES IN 84             1        50         1
 5   ADMINISTRATOR NEEDS FOR PHD NURSES IN 84                1        50         1

 1   PRACTITIONER   NEEDS FOR AD NURSES IN 84                0         0         0
 2   PRACTITIONER NEEDS FOR DIPL NURSES IN 84                0         0         0
 3   PRACTITIONER NEEDS FOR BACC NURSES IN 84                0         0         0
 4   PRACTITIONER NEEDS FOR MASTER NURSES IN 84              0         0         0
 5   PRACTITIONER NEEDS FOR PHD NURSES IN 84                 0         0         0

 1   RESEARCH CONSULT NEEDS FOR BACC NURSES IN 84            0         0         0
 2   RESEARCH CONSULT NEEDS FOR MAST NURSES IN 84            .         0         0
 3   RESEARCH CONSULT NEEDS FOR PHD NURSES IN 84             1       100         1


     1        OTHER LNP NEEDS IN 84                  0            0            0
     2        OTHER AD NURSE NEEDS IN 84             0            0            0
     3        OTHER DIPL NURSE NEEDS IN 84           0            0            0
     4        OTHER BACC NURSE NEEDS IN 84           0            0            0
     5        OTHER MASTER NURSE NEEDS IN 84         0            0            0
     6        OTHER PHD NURSE NEEDS IN 84            0            0            0
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                          EDUCATION PROGRAMS

OBS   GROUP                                          SAMPLE   PERCENT   ESTTOT

 1    GENERAL STAFF LPN NEEDS THRU 86                  0          0        0
 2    GENERAL STAFF AD NURSE NEEDS THRU 86             0          0        0
 3    GENERAL STAFF DIPL NURSE NEEDS THRU 86           0          0        0
 4    GENERAL STAFF BACC NURSE NEEDS THRU 86           1        100        1

  1    CLINICAL NEEDS FOR MASTER NURSES THRU 86         1        50        1
  2    CLINICAL NEEDS FOR PHD NURSES THRU 86            1        50        1

 1   INSTRUCTOR NEEDS FOR AD NURSES THRU 86              0    0.0000       0
 2   INSTRUCTOR NEEDS FOR DIPL NURSES THRU 86            0    0.0000       0
 3   INSTRUCTOR NEEDS FOR BACC NURSES THRU 86            5   17.2414       5
 4   INSTRUCTOR NEEDS FOR MASTER NURSES THRU 86         21   72.4138      22
 5   INSTRUCTOR NEEDS FOR PHD NURSES THRU 86             3   10.3448       3

  1   CONSULTANT NEEDS FOR BACC NURSES THRU 86          0          0       0
  2   CONSULTANT NEEDS FOR MASTER NURSES THRU 86        0          0       0
  3   CONSULTANT NEEDS FOR PHD NURSES THRU 86           0          0       0

   1  ANESTHETISTS NEEDS FOR BACC NURSES THRU 86        0         0       0
   2  ANESTHETISTS NEEDS FOR MASTER NURSES THRU 86      0         0       0

  1   SUPERVISOR NEEDS FOR AD NURSES THRU 86           0          0        0
  2   SUPERVISOR NEEDS FOR DIPL NURSES THRU 86         0          0        0
  3   SUPERVISOR NEEDS FOR BACC NURSES THRU 86         0          0        0
  4   SUPERVISOR NEEDS FOR MASTER NURSES THRU 86       0          0        0
  5   SUPERVISOR NEEDS FOR PHD NURSES THRU 86          0          0        0

 1  ADMINISTRATOR NEEDS FOR AD NURSES THRU 86          0          0       0
 2  ADMINISTRATOR NEEDS FOR DIPL NURSES THRU 86        0          0       0
 3  ADMINISTRATOR NEEDS FOR BACC NURSES THRU 86        0          0       0
 4  ADMINISTRATOR NEEDS FOR MASTER NURSES THRU 86      0          0       0
 5  ADMINISTRATOR NEEDS FOR PHD NURSES THRU 86         1        100       1

  1  PRACTITIONER NEEDS FOR AD NURSES THRU 86          0         0       0
  2  PRACTITIONER NEEDS FOR DIPL NURSES THRU 86        0         0       0
  3  PRACTITIONER NEEDS FOR BACC NURSES THRU 86        0         0       0
  4  PRACTITIONER NEEDS FOR MASTER NURSES THRU 86      0         0       0
  5  PRACTITIONER NEEDS FOR PHD NURSES THRU 86         0         0       0

1     RESEARCH CONSULT NEEDS FOR BACC NURSES THRU 86     0       0     0
2     RESEARCH CONSULT NEEDS FOR MS NURSES THRU 86       0       0     0
3     RESEARCH CONSULT NEEDS FOR PHD NURSES THRU 86      1     100     1

    1       OTHER LPN NEEDS THRU 86                0          0          0
    2       OTHER AD NURSE NEEDS THRU 86           0          0          0
    3       OTHER DIPL NURSE NEEDS THRU 86         0          0          0
    4       OTHER BACC NURSE NEEDS THRU 86         0          0          0
    5       OTHER MASTER NURSE NEEDS THRU 86       0          0          0
    6       OTHER PHD NURSE NEEDS THRU 86          0          0          0
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                              COMMUNITY HEALTH AGENCY

OBS   GROUP                                                SAMPLE   PERCENT   ESTTOT

 1    GENERAL STAFF NEEDS FOR LPN IN 84                       0      0.0000      0
 2    GENERAL STAFF NEEDS FOR  AD NURSES IN 84                1     14.2857      1
 3    GENERAL STAFF NEEDS FOR DIPL NURSES IN 84               0      0.0000      0
 4    GENERAL STAFF NEEDS FOR BACC NURSES IN 84               6     85.7143      9

 1   CLINICAL SPEC NEEDS FOR MASTER NURSES IN 84             0        0       0
 2   CLINICAL SPEC NEEDS FOR PHD NURSES IN 84                0        0       0

 1    NURSING INSTR NEEDS FOR AD NURSES IN 84                 0        0           0
 2    NURSING INSTR NEEDS FOR DIPL NURSES IN 84               0        0           0
 3    NURSING INSTR NEEDS FOR BACC NURSES IN 84               0        0           0
 4    NURSING INSTR NEEDS FOR MAST NURSES IN 84               0        0           0
 5    NURSING INSTR NEEDS FOR DR NURSES IN 84                 0        0           0

 1    CONSULTING NEEDS FOR BACC NURSES IN 84                  0        0           0
 2    CONSULTING NEEDS FOR  MASTER NURSES IN 84               1       50           1
 3    CONSULTING NEEDS FOR PHD NURSES IN 84                   1       50           1

 1   ANESTHETISTS NEEDS FOR BACC NURSES IN 84                 0        0           0
 2   ANESTHETISTS NEEDS FOR MASTER NURSES IN 84               0        0           0

 1    SUPERVISORS NEEDS FOR AD NURSES IN 84                   0        0           0
 2    SUPERVISORS NEEDS FOR DIPL NURSES IN 84                 0        0           0
 3    SUPERVISORS NEEDS FOR BACC NURSES IN 84                 0        0           0
 4    SUPERVISORS NEEDS FOR MASTER NURSES.IN 84               0        0           0
 5    SUPERVISORS NEEDS FOR PHD NURSES IN 84                  0        0           0

 1   ADMINISTRATOR NEEDS FOR AD NURSES IN 84                  0        0       0
 2   ADMINISTRATOR NEEDS FOR DIPL NURSES IN 84                0        0       0
 3   ADMINISTRATOR NEEDS FOR BACC NURSES IN 84                1      100       1
 4   ADMINISTRATOR NEEDS FOR MASTER NURSES IN 84              0        0       0
 5   ADMINISTRATOR NEEDS FOR PHD NURSES IN 84                 0        0       0

 1   PRACTITIONER   NEEDS FOR AD NURSES IN 84                 1       25           1
 2   PRACTITIONER NEEDS FOR DIPL NURSES IN 84                 1       25           1
 3   PRACTITIONER NEEDS FOR BACC NURSES IN 84                 1       25           1
 4   PRACTITIONER NEEDS FOR MASTER NURSES IN 84               1       25           1
 5   PRACTITIONER NEEDS FOR PHD NURSES IN 84                  0        0           0

 1   RESEARCH CONSULT NEEDS FOR BACC NURSES IN 84             0        0       0
 2   RESEARCH CONSULT NEEDS FOR MAST NURSES IN 84             0        0       0
 3   RESEARCH CONSULT NEEDS FOR PHD NURSES IN 84              0        0       0

         1       OTHER LNP NEEDS IN 84                      0        0            0
         2       OTHER AD NURSE NEEDS IN 84                 0        0            0
         3       OTHER DIPL NURSE NEEDS IN 84               0        0            0
         4       OTHER BACC NURSE NEEDS IN 84               0        0            0
         5       OTHER MASTER NURSE NEEDS IN 84             0        0            0
         6       OTHER PHD NURSE NEEDS IN 84                0        0            0
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COMMUNITY HEALTH AGENCY

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OBS   GROUP                                                  SAMPLE    PERCENT    ESTTOT

 1    GENERAL STAFF LPN NEEDS THRU 86                           1       8.3333       1
 2    GENERAL STAFF AD NURSE NEEDS THRU 86                      0       0.0000       0
 3    GENERAL STAFF DIPL NURSE NEEDS THRU 86                    2      16.6667       3
 4    GENERAL STAFF BACC NURSE NEEDS THRU 86                    9      75.0000      14

 1   CLINICAL NEEDS FOR MASTER NURSES THRU 86                 0          0          0
 2   CLINICAL NEEDS FOR PHD NURSES THRU 86                    0          0          0

 1   INSTRUCTOR NEEDS FOR AD NURSES THRU 86                     0          0          0
 2   INSTRUCTOR NEEDS FOR DIPL NURSES THRU 86                   0          0          0
 3   INSTRUCTOR NEEDS FOR BACC NURSES THRU 86                   0          0          0
 4   INSTRUCTOR NEEDS FOR MASTER NURSES THRU 86                 0          0          0
 5   INSTRUCTOR NEEDS FOR PHD NURSES THRU 86                    0          0          0

 1   CONSULTANT NEEDS FOR BACC NURSES THRU 86                   0          0          0
 2   CONSULTANT NEEDS FOR MASTER NURSES THRU 86                 1         50          1
 3   CONSULTANT NEEDS FOR PHD NURSES THRU 86                    1         50          1

 1   ANESTHETISTS NEEDS FOR BACC NURSES THRU 86                  0          0          0
 2   ANESTHETISTS NEEDS FOR MASTER NURSES THRU 86                0          0          0

 1    SUPERVISOR NEEDS FOR AD NURSES THRU 86                    0       0.0000        0
 2    SUPERVISOR NEEDS FOR DIPL NURSES THRU 86                  0       0.0000        0
 3    SUPERVISOR NEEDS FOR BACC NURSES THRU 86                  2      66.6667        3
 4    SUPERVISOR NEEDS FOR MASTER NURSES THRU 86                1      33.3333        1
 5    SUPERVISOR NEEDS FOR PHD NURSES THRU 86                   0       0.0000        0

 1   ADMINISTRATOR NEEDS FOR AD NURSES THRU 86                    0          0        0
 2   ADMINISTRATOR NEEDS FOR DIPL NURSES THRU 86                  0          0        0
 3   ADMINISTRATOR NEEDS FOR BACC NURSES THRU 86                  1        100        1
 4   ADMINISTRATOR NEEDS FOR MASTER NURSES THRU 86                0          0        0
 5   ADMINISTRATOR NEEDS FOR PHD NURSES THRU 86                   0          0        0

 1    PRACTITIONER NEEDS FOR AD NURSES THRU 86                    1         25        1
 2    PRACTITIONER NEEDS FOR DIPL NURSES THRU 86                  1         25        1
 3    PRACTITIONER NEEDS FOR BACC NURSES THRU 86                  1         25        1
 4    PRACTITIONER NEEDS FOR MASTER NURSES THRU 86                1         25        1
 5    PRACTITIONER NEEDS FOR PHD NURSES THRU 86                   0          0        0

1     RESEARCH CONSULT NEEDS FOR BACC NURSES THRU 86        0       0       0
2     RESEARCH CONSULT NEEDS FOR MS NURSES THRU 86          1     100       1
3     RESEARCH CONSULT NEEDS FOR PHD NURSES THRU 86         0       0       0

 1      OTHER LPN NEEDS THRU 86                          0            0            0
 2      OTHER AD NURSE NEEDS THRU 86                     0            0            0
 3      OTHER DIPL NURSE NEEDS THRU 86                   0            0            0
 4      OTHER BACC NURSE NEEDS THRU 86                   0            0            0
 5      OTHER MASTER NURSE NEEDS THRU 86                 0            0            0
 6      OTHER PHD NURSE NEEDS THRU 86                    0            0            0
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                         HOME HEALTH CARE AGENCY

OBS   GROUP                                             SAMPLE   PERCENT   ESTTOT

 1    GENERAL STAFF NEEDS FOR LPN IN 84                   1       9.0909     1
 2    GENERAL STAFF NEEDS FOR  AD NURSES IN 84            1       9.0909     1
 3    GENERAL STAFF NEEDS FOR DIPL NURSES IN 84           4      36.3636     7
 4    GENERAL STAFF NEEDS FOR BACC NURSES IN 84           5      45.4545     9

 1   CLINICAL SPEC NEEDS FOR MASTER NURSES IN 84          0        0         0
 2   CLINICAL SPEC NEEDS FOR PHD NURSES IN 84             0        0         0

 1     NURSING INSTR NEEDS FOR AD NURSES IN 84            0         0          0
 2     NURSING INSTR NEEDS FOR DIPL NURSES IN 84          0         0          0
 3     NURSING INSTR NEEDS FOR BACC NURSES IN 84          0         0          0
 4     NURSING INSTR NEEDS FOR MAST NURSES IN 84          0         0          0
 5     NURSING INSTR NEEDS FOR DR NURSES IN 84            0         0          0

 1     CONSULTING NEEDS FOR BACC NURSES IN 84             0         0          0
 2     CONSULTING NEEDS FOR  MASTER NURSES IN 84          0         0          0
 3     CONSULTING NEEDS FOR PHD NURSES IN 84              0         0          0

 1    ANESTHETISTS NEEDS FOR BACC NURSES IN 84            0         0          0
 2    ANESTHETISTS NEEDS FOR MASTER NURSES IN 84          0         0          0

  1     SUPERVISORS NEEDS FOR AD NURSES IN 84             0         0          0
  2     SUPERVISORS NEEDS FOR DIPL NURSES IN 84           0         0          0
  3     SUPERVISORS NEEDS FOR BACC NURSES IN 84           0         0          0
  4     SUPERVISORS NEEDS FOR MASTER NURSES IN 84         0         0          0
  5     SUPERVISORS NEEDS FOR PHD NURSES IN 84            0         0          0

   1   ADMINISTRATOR NEEDS FOR AD NURSES IN 84             0        0         0
   2   ADMINISTRATOR NEEDS FOR DIPL NURSES IN 84           0        0         0
   3   ADMINISTRATOR NEEDS FOR BACC NURSES IN 84           0        0         0
   4   ADMINISTRATOR NEEDS FOR MASTER NURSES IN 84         0        0         0
   5   ADMINISTRATOR NEEDS FOR PHD NURSES IN 84            0        0         0

 1     PRACTITIONER   NEEDS FOR AD NURSES IN 84            0        0          0
 2     PRACTITIONER NEEDS FOR DIPL NURSES IN 84            0        0          0
 3     PRACTITIONER NEEDS FOR BACC NURSES IN 84            0        0          0
 4     PRACTITIONER NEEDS FOR MASTER NURSES IN 84          0        0          0
 5     PRACTITIONER NEEDS FOR PHD NURSES IN 94             0        0          0

  1   RESEARCH CONSULT NEEDS FOR BACC NURSES IN 84    0         0         0
  2   RESEARCH CONSULT NEEDS FOR MAST NURSES IN 84    0         0         0
  3   RESEARCH CONSULT NEEDS FOR PHD NURSES IN 84     0         0         0

        1       OTHER LNP NEEDS IN 84                  0           0          0
        2       OTHER AD NURSE NEEDS IN 84             0           0          0
        3       OTHER DIPL NURSE NEEDS IN 84           0           0          0
        4       OTHER BACC NURSE NEEDS IN 84           2         100          3
        5       OTHER MASTER NURSE NEEDS IN 84         0           0          0
        6       OTHER PHD NURSE NEEDS IN 84            0           0          0
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                         HOME HEALTH CARE AGENCY

OBS     GROUP                                           SAMPLE    PERCENT    ESTTOT

 1      GENERAL STAFF LPN NEEDS THRU 86                    2         20          3
 2      GENERAL STAFF AD NURSE NEEDS THRU 86               0          0          0
 3      GENERAL STAFF DIPL NURSE NEEDS THRU 86             2         20          3
 4      GENERAL STAFF BACC NURSE NEEDS THRU 86             6         60         11


  1      CLINICAL NEEDS FOR MASTER NURSES THRU 86           0          0         0
  2      CLINICAL NEEDS FOR PHD NURSES THRU 86              0          0         0


  1     INSTRUCTOR NEEDS FOR AD NURSES THRU 86                0          0          0
  2     INSTRUCTOR NEEDS FOR DIPL NURSES THRU 86              0          0          0
  3     INSTRUCTOR NEEDS FOR BACC NURSES THRU 86              0          0          0
  4     INSTRUCTOR NEEDS FOR MASTER NURSES THRU 86            0          0          0
  5     INSTRUCTOR NEEDS FOR PHD NURSES THRU 86               0          0          0


  1     CONSULTANT NEEDS FOR BACC NURSES THRU 86              0          0          0
  2     CONSULTANT NEEDS FOR MASTER NURSES THRU 86            0          0          0
  3     CONSULTANT NEEDS FOR PHD NURSES THRU 86               0          0          0


  1    ANESTHETISTS NEEDS FOR BACC NURSES THRU 86              0          0          0
  2    ANESTHETISTS NEEDS FOR MASTER NURSES THRU 86            0          0          0


  1     SUPERVISOR NEEDS FOR AD NURSES THRU 86                0           0          0
  2     SUPERVISOR NEEDS FOR DIPL NURSES THRU 86              0           0          0
  3     SUPERVISOR NEEDS FOR BACC NURSES THRU 86              2         100          3
  4     SUPERVISOR NEEDS FOR MASTER NURSES THRU 86            0           0          0
  5     SUPERVISOR NEEDS FOR PHD NURSES THRU 86               0           0          0


  1    ADMINISTRATOR NEEDS FOR AD NURSES THRU 86               0          0          0
  2    ADMINISTRATOR NEEDS FOR DIPL NURSES THRU 86             0          0          0
  3    ADMINISTRATOR NEEDS FOR BACC NURSES THRU 86             1         50          1
  4    ADMINISTRATOR NEEDS FOR MASTER NURSES THRU 86           1         50          1
  5    ADMINISTRATOR NEEDS FOR PHD NURSES THRU 86              0          0          0


  1    PRACTITIONER NEEDS FOR AD NURSES THRU 86                0           0          0
  2    PRACTITIONER NEEDS FOR DIPL NURSES THRU 86              1         100          1
  3    PRACTITIONER NEEDS FOR BACC NURSES THRU 86              0           0          0
  4    PRACTITIONER NEEDS FOR MASTER NURSES THRU 86            0           0          0
  5    PRACTITIONER NEEDS FOR PHD NURSES THRU 86               0           0          0


 1      RESEARCH CONSULT NEEDS FOR BACC NURSES THRU 86      0      0      0
 2      RESEARCH CONSULT NEEDS FOR MS NURSES THRU 86        0      0      0
 3      RESEARCH CONSULT NEEDS FOR PHD NURSES THRU 86       0      0      0


   1         OTHER LPN NEEDS THRU 86                       2          50          3
   2         OTHER AD NURSE NEEDS THRU 86                  0           0          0
   3         OTHER DIPL NURSE NEEDS THRU 86                0           0          0
   4         OTHER BACC NURSE NEEDS THRU 86                2          50          3
   5         OTHER MASTER NURSE NEEDS THRU 86              0           0          0
   6         OTHER PHD NURSE NEEDS THRU 86                 0           0          0
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                                  CLINICS

OBS   GROUP                                              SAMPLE   PERCENT   ESTTOT

 1    GENERAL STAFF NEEDS FOR LPN IN 84                    20     74.0741     30
 2    GENERAL STAFF NEEDS FOR  AD NURSES IN 84              0      0.0000      0
 3    GENERAL STAFF NEEDS FOR DIPL NURSES IN 84             5     18.5185      7
 4    GENERAL STAFF NEEDS FOR BACC NURSES IN 84             2      7.4074      3

   1  CLINICAL SPEC NEEDS FOR MASTER NURSES IN 84       0          0          0
   2  CLINICAL SPEC NEEDS FOR PHD NURSES IN 84          0          0          0

  1   NURSING INSTR NEEDS FOR AD NURSES IN 84          0            0          0
  2   NURSING INSTR NEEDS FOR DIPL NURSES IN 84        0            0          0
  3   NURSING INSTR NEEDS FOR BACC NURSES IN 84        1          100          1
  4   NURSING INSTR NEEDS FOR MAST NURSES IN 84        0            0          0
  5   NURSING INSTR NEEDS FOR DR NURSES IN 84          0            0          0

  1   CONSULTING NEEDS FOR BACC NURSES IN 84           0          0          0
  2   CONSULTING NEEDS FOR  MASTER NURSES IN 84        0          0          0
  3   CONSULTING NEEDS FOR PHD NURSES IN 84            0          0          0

  1   ANESTHETISTS NEEDS FOR BACC NURSES IN 84          1          100          1
  2   ANESTHETISTS NEEDS FOR MASTER NURSES IN 84        0            0          0

  1   SUPERVISORS NEEDS FOR AD NURSES IN 84            0          0          0
  2   SUPERVISORS NEEDS FOR DIPL NURSES IN 84          0          0          0
  3   SUPERVISORS NEEDS FOR BACC NURSES IN 84          0          0          0
  4   SUPERVISORS NEEDS FOR MASTER NURSES IN 84        0          0          0
  5   SUPERVISORS NEEDS FOR PHD NURSES IN 84           0          0          0

   1  ADMINISTRATOR NEEDS FOR AD NURSES IN 84           0          0          0
   2  ADMINISTRATOR NEEDS FOR DIPL NURSES IN 84         0          0          0
   3  ADMINISTRATOR NEEDS FOR BACC NURSES IN 84         0          0          0
   4  ADMINISTRATOR NEEDS FOR MASTER NURSES IN 84       0          0          0
   5  ADMINISTRATOR NEEDS FOR PHD NURSES IN 84          0          0          0

 1    PRACTITIONER   NEEDS FOR AD NURSES IN 84          0            0          0
 2    PRACTITIONER NEEDS FOR DIPL NURSES IN 84          0            0          0
 3    PRACTITIONER NEEDS FOR BACC NURSES IN 84          2          100          3
 4    PRACTITIONER NEEDS FOR MASTER NURSES IN 84        0            0          0
 5    PRACTITIONER NEEDS FOR PHD NURSES IN 84           0            0          0

   1  RESEARCH CONSULT NEEDS FOR BACC NURSES IN 84        0          0          0
   2  RESEARCH CONSULT NEEDS FOR MAST NURSES IN 84        0          0          0
   3  RESEARCH CONSULT NEEDS FOR PHD NURSES IN 84         0          0          0

      1       OTHER LNP NEEDS IN 84                    0          0          0
      2       OTHER AD NURSE NEEDS IN 84               0          0          0
      3       OTHER DIPL NURSE NEEDS IN 84             0          0          0
      4       OTHER BACC NURSE NEEDS IN 84             0          0          0
      5       OTHER MASTER NURSE NEEDS IN 84           0          0          0
      6       OTHER PHD NURSE NEEDS IN 84              0          0          0
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                              CLINICS

OBS   GROUP                                          SAMPLE   PERCENT    ESTTOT

 1    GENERAL STAFF LPN NEEDS THRU 86                  33     70.2128      50
 2    GENERAL STAFF AD NURSE NEEDS THRU 86              1      2.1277       1
 3    GENERAL STAFF DIPL NURSE NEEDS THRU 86            8     17.0213      12
 4    GENERAL STAFF BACC NURSE NEEDS THRU 86            5     10.6383       7


   1   CLINICAL NEEDS FOR MASTER NURSES THRU 86        0         0          0
   2   CLINICAL NEEDS FOR PHD NURSES THRU 86           0         0          0

 1   INSTRUCTOR NEEDS FOR AD NURSES THRU 86            0         0          0
 2   INSTRUCTOR NEEDS FOR DIPL NURSES THRU 86          0         0          0
 3   INSTRUCTOR NEEDS FOR BACC NURSES THRU 86          0         0          0
 4   INSTRUCTOR NEEDS FOR MASTER NURSES THRU 86        0         0          0
 5   INSTRUCTOR NEEDS FOR PHD NURSES THRU 86           0         0          0

 1   CONSULTANT NEEDS FOR BACC NURSES THRU 86           0         0          0
 2   CONSULTANT NEEDS FOR MASTER NURSES THRU 86         0         0          0
 3   CONSULTANT NEEDS FOR PHD NURSES THRU 86            0         0          0

  1  ANESTHETISTS NEEDS FOR BACC NURSES THRU 86          0        0         0
  2  ANESTHETISTS NEEDS FOR MASTER NURSES THRU 86        0        0         0

 1   SUPERVISOR NEEDS FOR AD NURSES THRU 86             0         0          0
 2   SUPERVISOR NEEDS FOR DIPL NURSES THRU 86           0         0          0
 3   SUPERVISOR NEEDS FOR BACC NURSES THRU 86           0         0          0
 4   SUPERVISOR NEEDS FOR MASTER NURSES THRU 86         0         0          0
 5   SUPERVISOR NEEDS FOR PHD NURSES THRU 86            0         0          0

 1  ADMINISTRATOR NEEDS FOR AD NURSES THRU 86            0        0          0
 2  ADMINISTRATOR NEEDS FOR DIPL NURSES THRU 86          0        0          0
 3  ADMINISTRATOR NEEDS FOR BACC NURSES THRU 86          0        0          0
 4  ADMINISTRATOR NEEDS FOR MASTER NURSES THRU 86        0        0          0
 5  ADMINISTRATOR NEEDS FOR PHD NURSES THRU 86           0        0          0

 1   PRACTITIONER NEEDS FOR AD NURSES THRU 86           0         0          0
 2   PRACTITIONER NEEDS FOR DIPL NURSES THRU 86         0         0          0
 3   PRACTITIONER NEEDS FOR BACC NURSES THRU 86         2       100          3
 4   PRACTITIONER NEEDS FOR MASTER NURSES THRU 86       0         0          0
 5   PRACTITIONER NEEDS FOR PHD NURSES THRU 86          0         0          0

 1     RESEARCH CONSULT NEEDS FOR BACC NURSES THRU 86     0      0          0
 2     RESEARCH CONSULT NEEDS FOR MS NURSES THRU 86       0      0          0
 3     RESEARCH CONSULT NEEDS FOR PHD NURSES THRU 86      0      0          0

     1      OTHER LPN NEEDS THRU 86                   0           0              0
     2      OTHER AD NURSE NEEDS THRU 86              0           0              0
     3      OTHER DIPL NURSE NEEDS THRU 86            0           0              0
     4      OTHER BACC NURSE NEEDS THRU 86            0           0              0
     5      OTHER MASTER NURSE NEEDS THRU 86          0           0              0
     6      OTHER PHD NURSE NEEDS THRU 86             0           0              0
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